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STEEL
The
Metalworking Weekly

September 16, 1957
Vol. 141 No. 12

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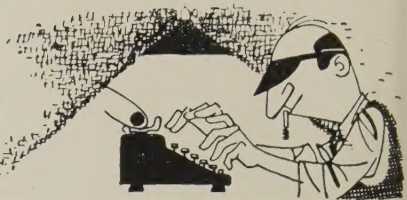
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behind the scenes



Leadership, Old Style

Those three little men strutting across this week's cover point up a subject that goes back a fur piece: Leadership, and dealing with workers. When Tom Bryan, the artist, was asked to make a cartoon illustrating the idea, he came up with three characters who used to supply his folks with drinkin' whisky in West Virginia.

Management is the logical leader of its people, but during the last couple of decades the unions have moved in, and management has moved back. Unions reached for leadership by shouting that management thought only in terms of production, and never of human beings; management replied that unions thought only in terms of dues, and never of the workers' welfare, and you guessed the rest: The guy in the middle is really confused.

This little guy has always had a rough time, whether he was producing pyramids, cathedrals, or jets. He was measured in days gone by as today, by what he could produce, but now he has shorter hours, more pay, better tools, and finer prospects. (See Page 119 for the Program for Management article.) In ancient Egypt the formula for measurement was simple: Produce or else. Nothing indicates this better than a page from an Egyptian manuscript found by a faithful Hussar attached to Napoleon's Nile expeditionary force. This celebrated sheet of hieroglyphics found its way to the flea market in Paris, where it was purchased by a school teacher from Wapakoneta, Ohio, who had a nephew who was nuts about secret ciphers. His translation follows:

Dear Diary

"I, Hole-in-the-Head, strawboss of 50 slaves on the Kufu Construction Project, this day saw the placement of 20 blocks of red granite. Found angular error. To forestall repetition, prayed to Set and threw four masons to crocodiles..."

"Placed 18 blocks of red granite today. Workmanship lousy. High priest says I lack qualities of leadership. Threw four workers to croco-

diles, and placed the rest on double shift..."

"Production dragging terribly. Barely managed to set 15 blocks. To nip slowdown, tossed four masons to crocodiles and ordered remaining workers to work right around the water clock. High priest in charge of crocodiles insists on fat men, but there are no fat men here at Kufu except the overseers..."

"Twelve blocks of red granite moved into position today. I, Hole-in-the-Head, strawboss of 38 slaves, may be obliged to revise notions of leadership, or initiate program to train crocodiles..."

Are You in Voice?

Many STEEL readers may not be aware of it, but the week starting today has been designated as Rock 'n' Roll Week, Anthracite Week, and National Sweater Week. The purpose of the singular observances is to: 1. Perpetuate the ideals (gulp!) of rock 'n' roll music. 2. Promote the use of anthracite in the eastern states. 3. Bring to public attention the advantages of sweaters. It would be difficult to celebrate a more diverse set of subjects, so let's all sing:

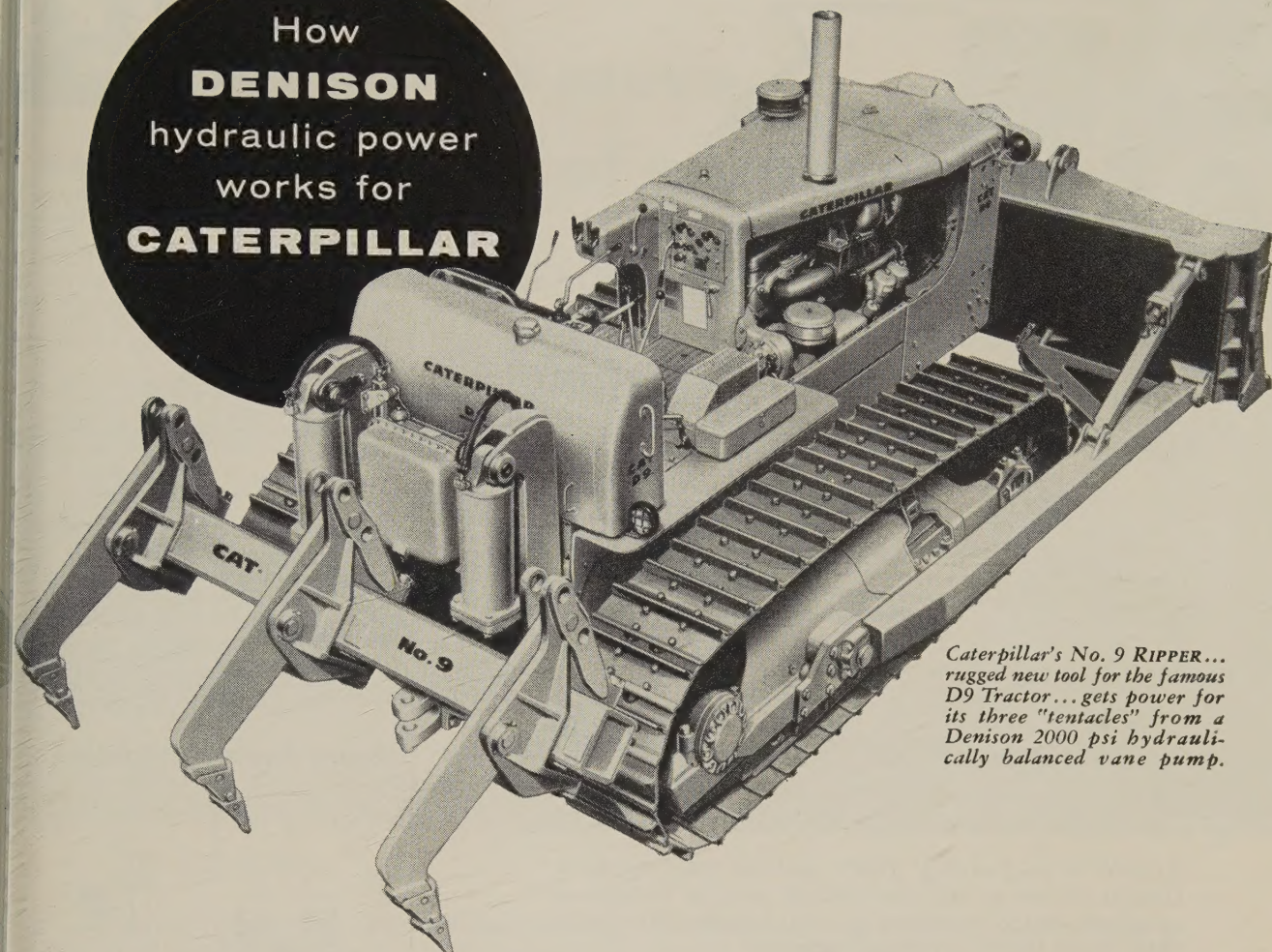
*We're gonna rock, rock, rock,
We're gonna rock 'n' roll all night
While the Scranton cats are diggin'
In the solid anthracite.
And while the mines
Are growing wetter,
Those Scranton cats
Should wear their sweaters.*

Oops!

In talking about appliances last week, we got so carried away by Ben Franklin's dangerous experiment with electricity that we forgot one important point, to wit: The cover of the Sept. 9 issue shows a picture of a washing machine innards. Frigid air went to the trouble of dismantling and photographing the parts of one of its 1958 models. Our belated thanks to the General Motors division

Shradu

How
DENISON
hydraulic power
works for
CATERPILLAR



Caterpillar's No. 9 RIPPER... rugged new tool for the famous D9 Tractor... gets power for its three "tentacles" from a Denison 2000 psi hydraulically balanced vane pump.

PUTTING TEETH IN THE "RIPPER"

...another application for DENISON hydraulic power

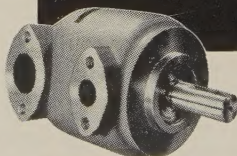
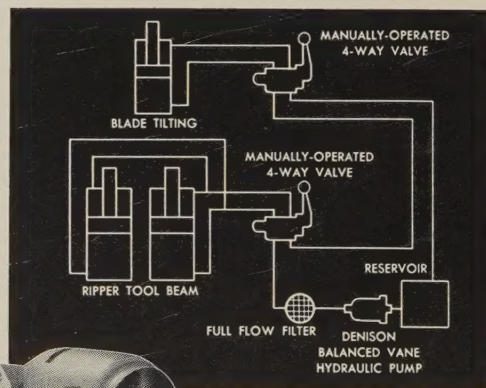
Caterpillar's rugged No. 9 Ripper—newest tool designed for their powerful D9 Tractor—proves again the basic design advantages of Denison's 2000 psi vane-type hydraulic pump.

The Ripper's three working shanks are powered by the Denison "T" series pump—capable of delivering up to 2000 psi continuously. Driven by the engine power take-off, the Ripper's pump actually operates at 1500 psi (relief valve setting) which provides generous reserve stamina to withstand heavy workloads with no danger of breakdown. With the Denison "T" series pump, Caterpillar designers assured the owner of old-weather pump-starting ability without damage to the pumps. They assured speedy servicing in the field because the complete pumping cartridge is removable as a unit. It all adds up to *lower operating cost* and dependable performance.

There's less weight, less cost-per-horsepower—with smaller lines and lives with the Denison 2000 psi pump as the heart of a hydraulic system. Design flexibility is unlimited.

Have your Denison hydraulic specialist tell you more about the 2000 psi pump—and help you with any equipment or machinery design problem. Write Denison Engineering Division, American Brake Shoe Co., 180 Dublin Road, Columbus 16, Ohio.

DESIGNERS—ENGINEERS! New Bulletin 201 describes "How to Design More Efficient Hydraulic Power Into Mobile Machinery." Write us.







Denison 2000 psi vane-type hydraulic pump.

Circuit drawing illustrates hydraulic system for powering Caterpillar's new No. 9 Ripper.


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• Dept. PDG-97
• Atlanta 3, Georgia
• Phone: JACkson 3-1706

Send me the facts about Industrial Georgia,
especially concerning _____

Name _____ Position _____

Company _____

Address _____

This message sponsored jointly by: The State of Georgia, and the Douglas, Ga., Chamber of Commerce.

LETTERS TO THE EDITORS

Steel Price Study Available

Your item, "Economist Disputes Kefauver's Theories," in the Windows Washington column of Aug. 19 (Page 114) was most interesting. It tells Senator Kefauver's hearing on the steel price increase. Could you tell me where we could obtain a copy of Prof. Julian Backman's 200-page study you mentioned?

K. O.
Marketing Research Section
Japan Steel & Tube Corp.
Tokyo

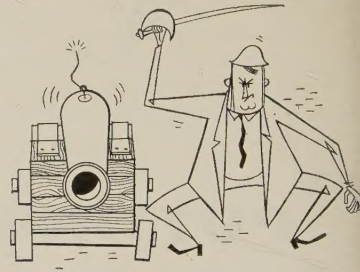
• A limited supply is available from John Munhall III, U. S. Steel Corp., 1625 K St. N.W., Washington 6, D. C.

Appreciates Reprint Service

In the Aug. 19 issue, I read the interesting article, "What Glass Can Offer Metal" (Page 154). I would like an additional copy for my reference. I appreciate this service.

Douglas W. Ham
Director of Product Engineering
Muskegon Piston Ring Co.
Muskegon, Mich.

Guard Against Corrosion



I read with interest the article, "New Ways To Fight Corrosion" (Aug. 20, Page 68). Please send a copy of the article and a copy of Part II, scheduled for Sept. 2 issue.

H. M. Grune
Metallurgical Engineer
Cold Rolled Products Div.
John A. Roebling's Sons Corp.
Subsidiary of Colorado Fuel & Iron Corp.
Trenton, N. J.

We would like a reprint.

A. W. Lancaster
Engineering Research
Dorr-Oliver-Long Ltd.
Orillia, Canada

15 Copies to Personnel Men

I was interested in the article, "Make Your Labor Pact Work" (Aug. 19, Page 118). May we have 15 copies so that distribution can be made to our personnel directors?

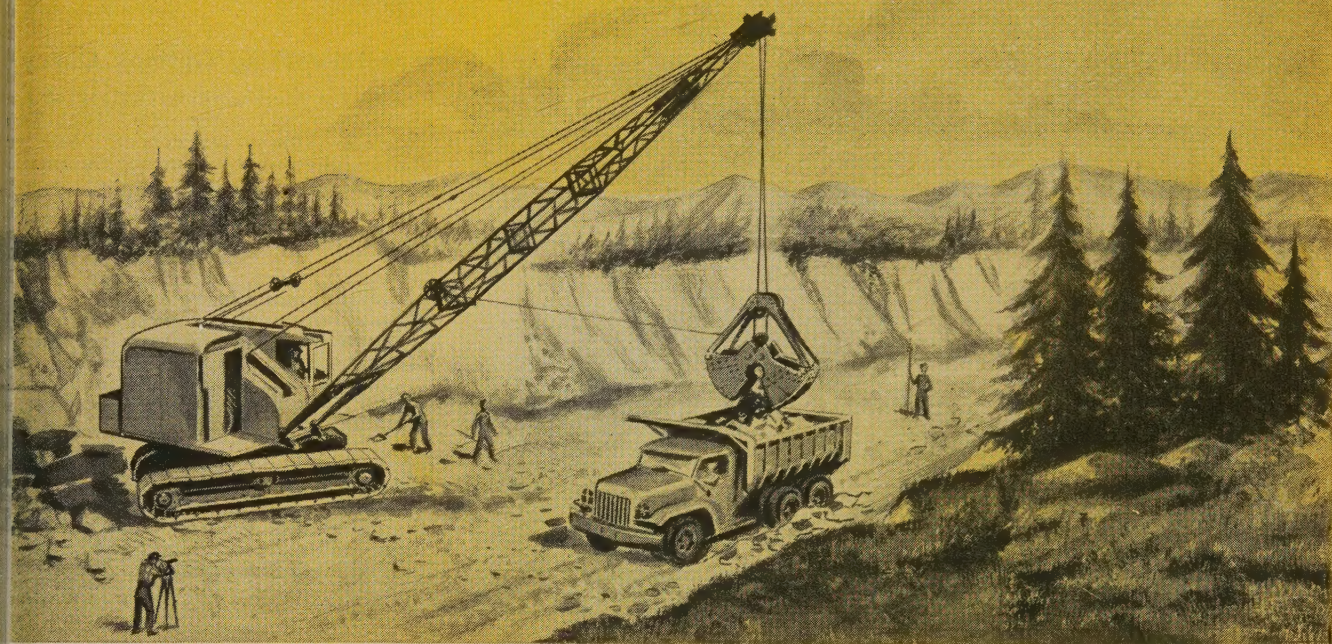
J. J. Regotta
Assistant Director
Employee & Labor Relations
Gould-National Batteries Inc.
St. Paul

Eager To Read Series

I would appreciate copies of your 1957 Program for Management series articles No. 1 through 6. I have read No. 7, "Research: Threshold to the Future" (July 15, Page 93), and am eager

(Please turn to Page 12)

GEARED to move mountains of earth!



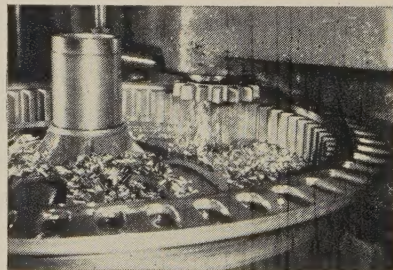
Sharp curves and steep grades used to be a part of almost any highway trip. But after the great new highway programs are completed, you will be able to travel nearly everywhere in our country with a greater degree of safety and comfort. Giant construction machines will move mountains of earth in building the sweeping scenic roads that will make up our national highway system.

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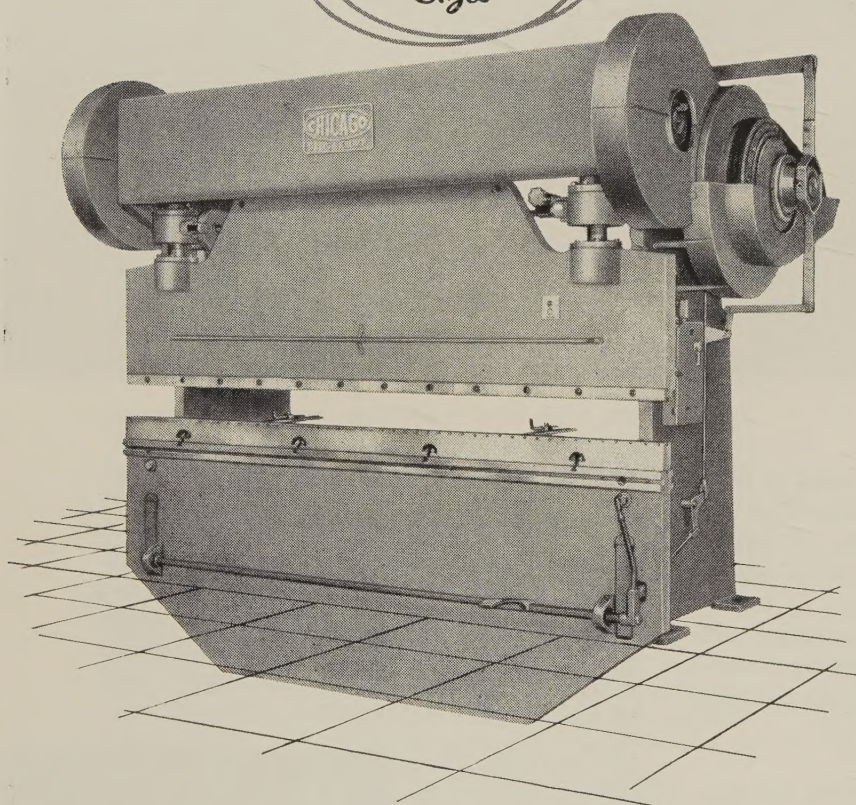
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LETTERS

(Concluded from Page 10)

to read the others in full and to have them on file for handy reference.

J. J. Linehan
Assistant Chief Engineer
Gerrard Steel Strapping Division
U. S. Steel Corporation
Chicago

Metalworking Outlook Query

In the Metalworking Outlook of August 19 (Page 101) is the item, "High Temperature Parts Developed." Will you please give us the source of information on the alloys cited?

D. K. McIlvaine
AED-Engineering
Small Motor Division
Westinghouse Electric Corporation
Lima, Ohio

• Write the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., and ask for the Office of Technical Services (Department of Commerce) publication, PB 121935, entitled, "Retainer Materials for Aircraft Gas Turbine Bearings."

Article Is Eye-Opener

Please send a copy of your interesting eye-opener article, "Needed: More Marketers" (Aug. 5, Page 66).

K. F. Wood
Advertising Assistant
Sheffield Corporation
Dayton, Ohio

We would appreciate a copy of this interesting article.

F. W. Gledhill
Commercial Research
Consolidated Western Steel Division
U. S. Steel Corporation
Los Angeles

Reader Wants Address

Please advise the address of the Hydroforming Co. of America. We have taken the firm name from the article "Complex Shapes at Bargain Rates" (Aug. 12, Page 124).

B. A. Delbert
Purchasing Agent
Federal-Mogul Division
Federal-Mogul Bearings Incorporated
St. Johns, Michigan

• The company's address is: 7400 W. Lawrence, Chicago, Ill.

New Use for Glass?

Concerning your article, "What Glass Can Offer Metal" (Aug. 19, Page 154), have the possibilities of using glass-coated draw dies in the production of deep drawn metal stampings been explored?

W. R. Melvin
Geo. W. Morris Company
Racine, Wisconsin

• Your letter is being referred to A. O. Smith Corp., Milwaukee.

Useful to Product Planner

I should appreciate a copy of the article, "How To Aid Your Engineers" (Page 64) and "Research . . . Threshold to the Future" (Page 93), from the July 15 issue. These should be valuable to me.

J. H. Romney
Product Planner
Dresser Manufacturing Division
Dresser Industries Incorporated
Bradford, Pennsylvania

CALENDAR

OF MEETINGS

t. 17-18, **Electronics Industries Association:** National technical machine tool automation meeting, Ambassador Hotel, Los Angeles, Calif. Association's address: 1721 DeSales St. N.W., Washington 6, D. C. Secretary: James D. Secrest.

t. 17-20, **American Die Casting Institute:** Annual meeting, Edgewater Beach Hotel, Chicago. Institute's address: 366 Madison Ave., New York 17, N. Y. Secretary: David Saine.

t. 18-20, **National Industrial Conference Board:** Marketing meeting, Waldorf-Astoria Hotel, New York. Board's address: 460 Park Ave., New York 22, N. Y. Secretary: Herbert S. Briggs.

t. 20, **Malleable Founders' Society:** Fall meeting, Hotel Cleveland, Cleveland. Society's address: 1800 Union Commerce Bldg., Cleveland 14, Ohio. Executive vice president: Lowell D. Ryan.

t. 21-24, **Steel Founders' Society of America:** Fall meeting, Homestead, Hot Springs, Pa. Society's address: 606 Terminal Tower, Cleveland 13, Ohio. Secretary: George K. Preher.

t. 22-24, **American Machine Tool Distributors Association:** Annual meeting, Hotel Cleveland, Cleveland. Association's address: 900 Arch St., Philadelphia 3, Pa. General manager: James C. Kelly.

t. 22-25, **American Institute of Wholesale Plumbing & Heating Supply Associations Inc.:** Annual meeting, Waldorf-Astoria Hotel, New York. Institute's address: 402 Albee Bldg., Washington 5, D. C. Executive secretary: George T. Underwood.

t. 23-25, **American Society of Mechanical Engineers:** Fall meeting, Hotel Statler, Hartford, Conn. Society's address: 29 W. 9th St., New York 18, N. Y. Secretary: E. E. Davies.

t. 23-26, **Association of Iron & Steel Engineers:** Annual convention, Penn Sheraton Hotel, Pittsburgh. Association's address: 1010 Empire Bldg., Pittsburgh 22, Pa. Managing director: T. J. Ess.

t. 26-27, **American Hot Dip Galvanizers Association Inc.:** Semiannual meeting,etherland-Hilton Hotel, Cincinnati. Association's address: 1806 First National Bank Bldg., Pittsburgh 22, Pa. Secretary: Stuart J. Swensson.

t. 29-Oct. 3, **National Screw Machine Products Association:** Fall membership meeting, Roadmoor Hotel, Colorado Springs, Colo. Association's address: 2860 E. 130th St., Cleveland 20, Ohio. Executive vice president: Martin B. Werntz.

t. 29-Oct. 2, **Packaging Machinery Manufacturers Institute:** Annual meeting, Cloisters, Sea Island, Ga. Institute's address: 342 Madison Ave., New York 17, N. Y. Executive director: Russell L. Sears.

t. 30-Oct. 1, **Material Handling Institute Inc.:** Joint industry fall meetings, Greenbriar, White Sulphur Springs, W. Va. Institute's address: One Gateway Center, Pittsburgh 22, Pa. Managing director: R. Kennedy Hanson.

t. 1-5, **Society of Automotive Engineers:** Aeronautic meeting, aircraft production forum and aircraft engineering display, Ambassador Hotel, Los Angeles. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

t. 3-4, **Refractories Institute:** Fall meeting, Grand Hotel, Point Clear, Ala. Institute's address: 1801 First National Bank Bldg., Pittsburgh 22, Pa. Executive secretary: Percy C. Newton.



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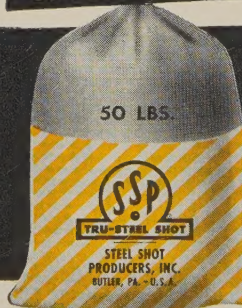
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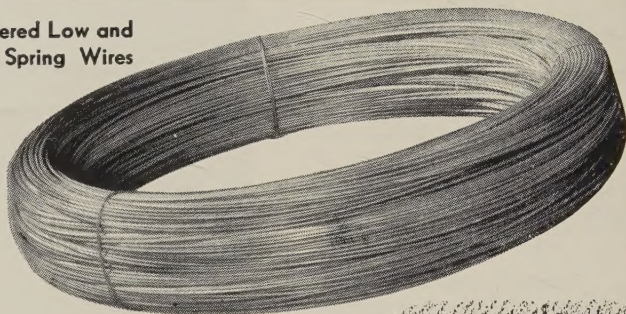
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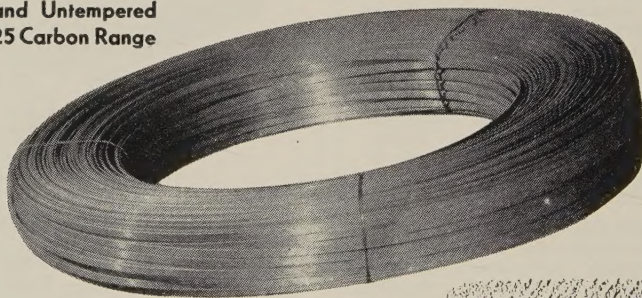
ROUND WIRE

Round Untempered Low and
High Carbon Spring Wires



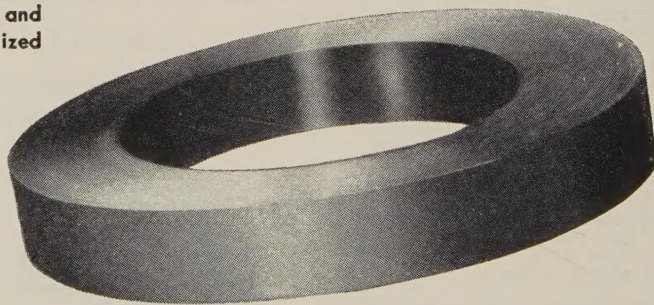
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Metalworking Outlook

Next Step in Steel Merger Case

Another step in the most important industrial legal battle of this decade will be taken today (Sept. 16). Bethlehem Steel Corp. and Youngstown Sheet & Tube Co. will file affidavits in federal court, Southern District of New York, showing why their merger would not reduce competition in the steel industry. Briefs will be exchanged in the next few weeks. Oral arguments by both sides will be heard beginning Nov. 4. The court's decision may come by December. If the U. S. wins, the matter will be carried to the Supreme Court by the defense. If the U. S. loses, it can demand a trial. In either event, the final decision won't come until 1959.

Armco Develops New PH Steel

Armco Steel Corp. has developed PH-15-7-Mo, a high strength stainless steel that will permit future aircraft and missiles to attain supersonic speeds without damage from air friction heat. Its cost is less than one-tenth that of high strength titanium alloys, says R. L. Gray, Armco president. Average price will run \$2000 to \$2200 a ton. The company is spending \$70 million for improvement and expansion of its Butler, Pa., works to speed production of this and other special steels. About \$75 million worth of stainless went into aircraft and missiles in 1956.

Purchasing Agents Report

Chicago purchasing agents report: Deliveries are good. Prices continue to rise. Inventories are stabilizing. Factory employment is slipping. Production is leveling out. Order backlogs are declining slightly.

Employment Dips

Employment fell to 66.4 million at mid-August from the record level a month before. At the same time, unemployment also declined, to 2.6 million, largely because students stopped their search for summer work. Although the job decline is not serious, normally there's a seasonal upturn in employment during August. Gains were registered in 1954, 1955, and 1956.

Construction Levels Off

The physical volume of new construction is off a little from what it was a year ago. Because of inflation, the dollar volume on a seasonally adjusted basis for the first eight months hit an annual rate of \$46.8 billion, compared with expenditures of \$46.1 billion for 1956. Public building shows the biggest gains over the 1956 pace.

SUB and Ohio

Look for a test case in the courts on the steel industry's methods of getting around Ohio's administrative ruling against payment of Supple-

mental Unemployment Benefits with state jobless pay. The ruling is specifically against the automotive SUB. The steel industry and the steel union take advantage of that technicality to make SUB payments. About 114,000 steelworkers are employed in Ohio. Layoffs have been light, so payments are low. In three other problem states—Indiana, Virginia, and North Carolina which have about 76,000 union members—other methods will be used to get around SUB barriers.

State Jobless Benefits Up

Out-of-work benefits were raised in half the states this year, says Commerce Clearing House. Some 23 states boosted the maximum benefits by an average of \$5 a week, and one other state provided a larger total by increasing the duration of payments. Meaning to industry: SUB payments will be proportionately lower in the states affected.

Teamsters Vs. AFL-CIO

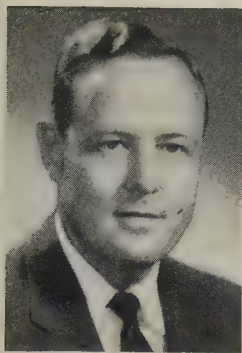
James Hoffa's chances of becoming president of the Teamsters Union are still good, despite publicity about opposition in the West. Mr. Hoffa already has enough delegates lined up to assure election at the convention which begins Sept. 30 at Miami, Fla. Watch for these Teamster-AFL-CIO developments: The federation's Ethical Practices Committee will recommend to the AFL-CIO executive council that the Teamsters be suspended. The council, at a special meeting Sept. 24-25, will vote suspension. It will be lifted if Mr. Hoffa fails to be elected and the Teamsters make some show of cleaning house at their convention. Otherwise, the suspension will hold until the federation's December convention. Then, a vote will come on reinstating the Teamsters or kicking them out.

Cooling Airborne Electronics

After a year of testing, Martin Co., Baltimore, thinks it has the answer to cooling electronic equipment inside airplanes or missiles traveling at Mach 5 (temperatures up to 700° F are developed). The system envelops electronic components in a water jacket. While outside temperatures rise, the equipment inside stays at the temperature of boiling water. Evaporative cooling, says Martin, "will surpass the best systems now in use."

Straws in the Wind

Sen. John L. McClellan (D., Ark.) still hasn't decided whether to investigate the United Steelworkers regarding alleged election irregularities last February . . . United Auto Workers' Public Review Board, watchdog of manners and morals, is now operating and has a big batch of cases, particularly concerning nine officials who used the Fifth Amendment at Senate hearings . . . Top executives earned 5.1 per cent more pay in 1957 than they did in 1956, says McKinsey & Co., management consultant.



September 16, 1957

11 More Fairless Works!

In surveying the expansion program of the steel industry, the editors of STEEL find that 7.6 million tons of capacity are being added during 1957. Next year, another 5.3 million tons will go in.

Post-Korean expansion, 1955 through 1958, will total 20.5 million tons. On Jan. 1, 1959, the industry will be able to turn out steel at the rate of 146 million tons a year.

For the years after 1958, the editors were able to turn up plans for the addition of only 1.2 million tons of capacity. At first blush, it would appear that the steel industry is reaching a plateau in its growth.

We don't think so.

In recent years, steel expansion has been coming in waves. From 1941 through 1944, 11.3 million tons were brought in to satisfy bulging war requirements. When the war ended, the steel industry could make a record 95.5 million tons a year.

Postwar, 1946 through 1950, about a half billion dollars a year were spent in replacing obsolete facilities and in bringing capacity up to 100 million tons on Jan. 1, 1950.

The real surge, of course, was induced by the Korean War. It reached its crest in 1952 when 8.9 million tons were added. On Jan. 1, 1955, capacity had reached 125.8 million tons—a gain of 25.8 million tons in four years.

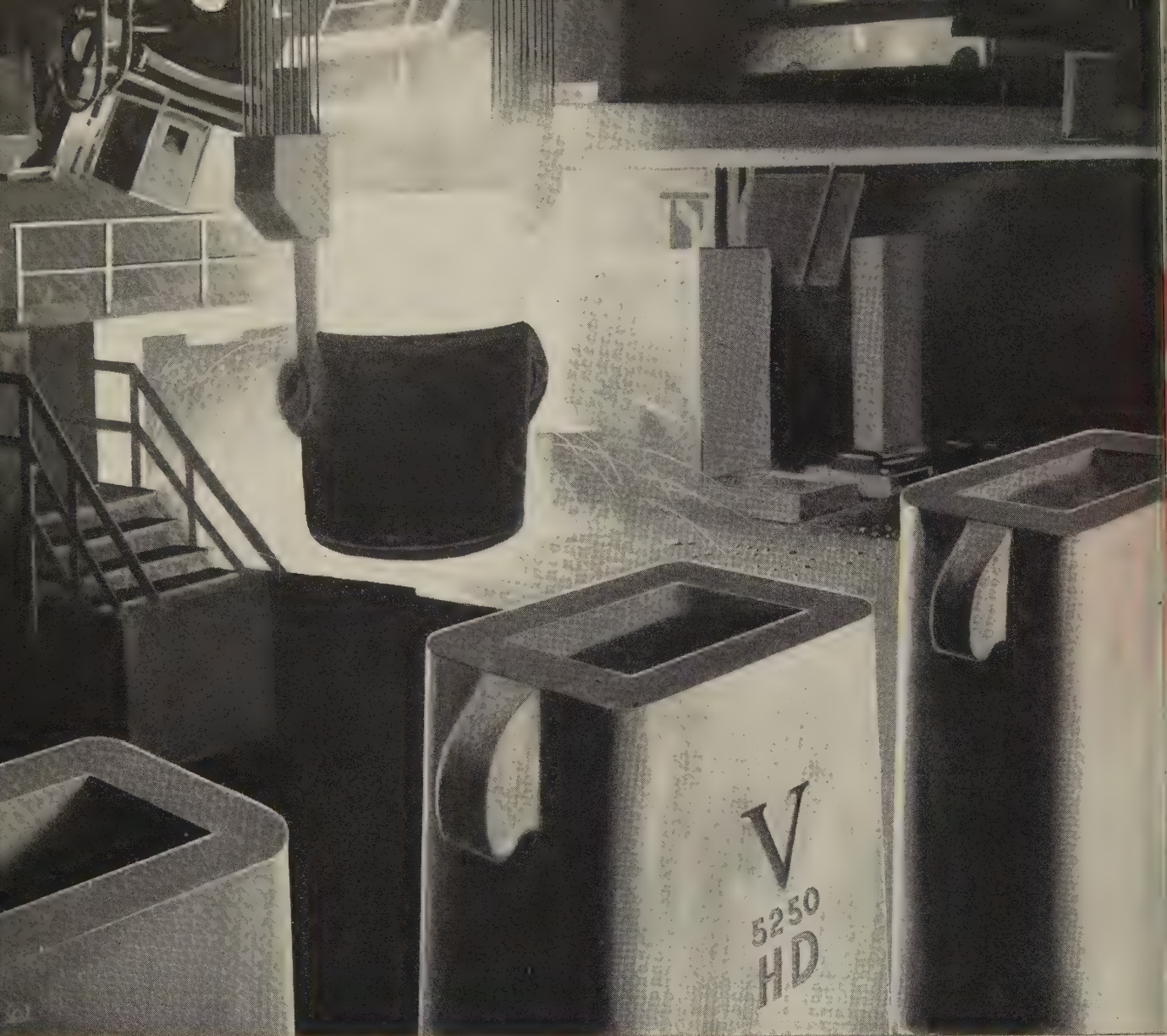
The most recent wave of expansion now reaching its crest is based on what the steel industry believes are the requirements of a nation at peace.

Those requirements will continue to grow. Prewar capacity was 1235 lb per person. By 1955, it had increased to 1520 lb. It's now 1560 lb.

We don't think it is unreasonable to assume that a minimum of 1800 lb per capita will be needed when we have a population of 190 million in 1965. That means another 25 million tons of capacity must be built when the next expansion wave comes in the 1960s.

That's 11 more Fairless Works!

Irwin H. Such
EDITOR-IN-CHIEF



All ingot moulds by Valley are
designed for individual steel plant
conditions. These moulds have been
proven the highest quality available to the
steel producing industry today.

VALLEY MOULD AND IRON CORPORATION

General Offices: Hubbard, Ohio

Western Office: Chicago, Illinois

Northern Office: Cleveland, Ohio

How U. S. Steelmaking Capacity Is Growing:

1955 2,534,780 Net Tons

1956 5,096,060 Net Tons

1957 7,600,000 Net Tons

1958 5,300,000 Net Tons

1,182,000 Net Tons

After 1958 ... This much is already in the works

Addition of 7.6 million ingot tons this year will push national capacity up to 141 million tons on next Jan. 1. Another 5.3 million tons will be completed in 1958

THIS YEAR is bringing the biggest increase yet in the current round of steel capacity expansion. Coming in are 7.6 million net tons of facilities to melt steel. This means that on next Jan. 1 there will be a national capacity of around 141 million net tons, a 5.6 per cent increase over the 133,459,50 tons existing on last Jan. 1. This presumes there will be no extensive retirements beyond those allowed for. (For details of the increases, see Page 80.)

The current round of steel expansion began in the autumn of 1955. At the start of that year, the country had 125,828,310 net tons of capacity to make steel for ingots and castings. In 1955, the addition totaled 2,534,780 tons. In 1956, it was 5,096,060 tons.

What 1958 Will Bring—During 1958, additions will come to 5.3 million net tons, which will put national capacity up to around 146

million tons on Jan. 1, 1959.

After 1958—Expansions underway or announced for completion after 1958 total 1,182,000 tons. Undoubtedly, the final figure will be bigger. Colorado Fuel & Iron Corp., Denver, for instance, is working on plans which could result in a substantial increase in the company's capacity in 1959.

Another increase (800,000 annual ingot tons) is planned by Barium Steel Corp., New York. It proposes to build an integrated plant on the Delaware River in Burlington County, N. J. The company, which hopes to get started on the plant this fall, contemplates a 1700 ton a day blast furnace, auxiliary equipment, and oxygen conversion facilities.

More To Use Oxygen—Installation of oxygen converters by Barium would bring to five the number of U. S. companies using this process. McLouth Steel Corp., Tren-

ton, Mich., is using it now. Installing it are: Jones & Laughlin Steel Corp., Aliquippa, Pa.; Kaiser Steel Corp., Fontana, Calif.; and Acme Steel Co., Riverdale, Ill. Two other companies on the North American continent are using it: Dominion Foundries & Steel Ltd., Hamilton, Ont., and Algoma Steel Corp., Sault Ste. Marie, Ont.

New Name—The oxygen converter process has been renamed the "L-D Process" by the Kaiser Engineers Div. of Henry J. Kaiser Co., Oakland, Calif. (Kaiser Engineers holds the exclusive U. S. patent licensing rights for the process.) The change was made to eliminate confusion of this process with others using oxygen. L-D is the abbreviation for the Linz-Donawitz process, developed in Austria.

Cost Cutter—L-D is looked to as a way of holding down the cost of installing steelmaking capacity. Construction of an integrated steel plant using open hearth furnaces costs between \$250 and \$300 a ton of annual ingot capacity. Acme Steel, which is installing two L-D units (converters), says its cost will be \$51 per annual ingot ton. Its plant will have 450,000 annual

STEEL INGOT CAPACITIES: Where They're Being Increased

Company	Place of Expansion	Ingot Expansion (Net tons)		After 1958
		1957	1958	
U. S. Steel Corp.	Pittsburgh District	225,000	445,000	.....
	Chicago District	.....	1,300,000	.....
Bethlehem Steel Co.	Bethlehem, Pa.	250,000*	.....	.....
	Lackawanna, N. Y.	300,000*	.....	.....
	Sparrows Point, Md.	2,000,000*	.....	.....
Bethlehem Pacific Coast Steel Corp.	Seattle	174,000*		.....
Republic Steel Corp.	Chicago	305,000	.....	.....
	Cleveland	500,000	.....	.....
	Gadsden, Ala.	408,000	.....	.....
	Warren, Ohio	408,000	.....	.....
Jones & Laughlin Steel Corp.	Aliquippa, Pa.	400,000	.....	.....
	Cleveland	500,000	.....	.....
	Warren, Mich.	300,000	.....	.....
	(formerly Rotary Electric Steel Co.)	.....	.....	.....
Youngstown Sheet & Tube Co.	East Chicago, Ind.	194,000*	.....	.....
	Youngstown	280,000*	.....	.....
National Steel Corp.		650,000 ¹		.....
Great Lakes Steel Corp.		150,000 ¹		.....
Weirton Steel Co.		.....		.....
Armco Steel Corp.	Middletown, Ohio	216,000	.....	.....
Sheffield Div.	Houston	60,000	.....	.....
Inland Steel Co.	East Chicago, Ind.	800,000		.....
Colorado Fuel & Iron Corp.		.....	.....	(+)
Sharon Steel Corp.	Farrell, Pa.	.....	84,000	.....
Kaiser Steel Corp.	Fontana, Calif.	.....	1,400,000	.....
McLouth Steel Corp.	Trenton, Mich.	194,000	238,000	.....
Pittsburgh Steel Co.	Monessen, Pa.	120,000	120,000	.....
Granite City Steel Co.	Granite City, Ill.	.....	240,000	144,000
Barium Steel Corp.	Burlington County, N. J.	.....	.....	800,000
Lukens Steel Co.	Coatesville, Pa.	.....	25,000	156,000
		.....	.....	to 180,700
Lone Star Steel Co.	Lone Star, Tex.	.....	150,000	.....
Laclede Steel Co.	Alton, Ill.	50,000	.....	.....
Acme Steel Co.	Chicago	.....	450,000	.....
Erie Forge & Steel Corp.	Erie, Pa.	.....	96,000	24,000
Baldwin-Lima-Hamilton Corp.		.....	.....	.....
Standard Steel Works Div.	Burnham, Pa.	18,750	.....	.....
Universal-Cyclops Steel Corp.	Coshocton, Ohio	.....	.....	50,000 ²
Eastern Stainless Steel Corp.	Baltimore	45,000	.....	.....
Latrobe Steel Co.	Latrobe, Pa.	.....	.....	8,000
Firth Sterling Inc.	McKeesport, Pa.	.....	1,100	.....
Totals		6,773,750 ³	4,549,100 ³	1,182,000

*STEEL's estimate. †Substantial increase contemplated for 1959. 1. By end of first quarter, 1958. 2. In 1959. 3. Does not include 1,774,000 net tons of capacity coming in over 1957-1958 but which cannot be pinpointed as to year.

ingot tons of capacity and will cost \$23 million.

Barium Steel is planning 800,000 annual ingot tons of capacity at a cost of \$50 million, a \$63 a ton rate.

A requisite for use of L-D is an

adequate supply of molten pig iron. Acme will assure this by using two iron producing cupolas. Using steel scrap, cold pig iron, coke, and limestone, they will make 1200 tons of iron a day. Barium Steel will make its molten iron in

its new blast furnace.

Record Expenditure—The magnitude that costs have reached in building and replacing steel plants is reflected by the American Iron & Steel Institute's estimate that the iron and steel industry in this country will spend a record \$1.7 billion this year for new equipment and construction. It tops the record \$1.2 billion spent last year. Expenditures in 1955 were \$730 million.

Incentives—One of the reasons the industry is expanding is to take care of the needs of an expanding population. This country's population is growing at a rate of 2.8 million a year. In 1960, we will have 180 million people. At that time, too, there will be an increase in the formations of families: People born in the big wave of births in the 1940s will start getting married. The additional families will need houses and equipment for them, and they will take steel.

Another reason for the steel industry's expansion and updating is to provide the increasing amounts and improved types of steel needed to further the progress in electronics, jet planes, missiles, powerplants, and automation.

The steel industry's expansion will not be limited to ingot capacity. Many companies are rounding out their finishing capacities to balance with their steelmaking capacities (see Pages 90-91).

Changing Times—One company that is updating its capacity is Inland Steel Co., Chicago. It is expanding its facilities to make wide flange beams and discontinuing the production of steel rails. Wide flange beams have been in growing demand, while the reverse is true for rails. Inland says: "Our studies indicate that there is an excess of capacity in the country for rail production now and in the foreseeable future." Inland's multimillion program, scheduled for completion in the first half of 1959, will lift its wide flange beam capacity to 54,000 tons a month. The company is now turning out 22,000 to 28,000 tons of wide flange beams a month.

* An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

Company by Company Expansion in Steel Industry—1955 to 1957

	Ingot Capacities (Net tons)		—Change—			Ingot Capacities (Net tons)		—Change—	
	Jan. 1, 1957	Jan. 1, 1955	Net tons	Per cent		Jan. 1, 1957	Jan. 1, 1955	Net tons	Per cent
Acme-Newport Steel Co.	608,000	.....	A	....	Laclede Steel Co.	500,000	500,000	0	0
Am Wood Steel Co.	800,000	625,000	+175,000	+28.0	Latrobe Steel Co.	24,000	24,000	0	0
Armco Products Inc.	105,160	103,000	+2,160	+2.1	Le Tourneau Inc., R. G.	83,100	83,100	0	0
Armco Steel Corp.	864,200	864,200	0	0	Lone Star Steel Co.	550,000	550,000	0	0
American Compressed Steel Corp.	21,600	21,600	0	0	Lukens Steel Co.	750,000	750,000	0	0
Armco Steel Corp. (Total)	5,950,000	4,950,000	+1,000,000	+20.2	McLouth Steel Corp.	1,380,000	1,200,000	+180,000	+15.0
Armco Steel Corp.	3,850,000	3,216,000	+634,000	+19.7	Merritt-Chapman & Scott Corp.				
Armco Steel Div.	2,100,000	1,734,000	+366,000	+21.1	Milton Steel Products Div.	90,000	67,000	+23,000	+34.3
Armco Steel Div.					Newport Steel Corp.		708,500	D	....
Armco Steel Co.	400,000	300,000	+100,000	+33.3	Mesta Machine Co.	141,000	105,000	+36,000	+34.3
Armco & Wilcox Co.	229,450	229,450	0	0	Midvale-Heppenstall Co.	163,350	347,100	-183,750	-52.9
Armco-Lima-Hamilton Corp.	169,960	169,960	0	0	Mississippi Steel Corp.	45,000	none	E	....
Armco Steel Corp. (Total)	895,360	886,600	+8,760	+1.0	National Forge & Ordnance Co.	25,000	25,000	0	0
Armco Steel Corp.	48,600	48,600	0	0	National Steel Corp. (Total) ...	6,200,000	6,000,000	+200,000	+3.3
Armco Iron & Steel Co. ...	846,760	838,000	+8,760	+1.0	Great Lakes Steel Corp.	3,200,000	3,400,000	-200,000	-5.9
Armco Co., Louis					Weirton Steel Co.	3,000,000	2,600,000	+400,000	+15.4
Armco River Steel Div.	136,080	136,080	0	0	National Supply Co.	50,200	50,200	0	0
Armco Steel Corp. (Total) ...	20,500,000	19,100,000	+1,400,000	+7.3	Newport News Shipbuilding				
Armco Steel Co.	19,500,000	18,200,000	+1,300,000	+7.1	& Dry Dock Co.	12,000	12,000	0	0
Armco Steel Pacific Coast Steel					Northeastern Steel Corp.	303,200	none	F	....
Armco Steel Corp.	1,000,000	900,000	+100,000	+11.1	Northwest Steel Rolling Mills Inc.	48,600	42,000	+6,600	+15.7
Armco-Warner Corp.	164,000	164,000	0	0	Northwestern Steel & Wire Co. ...	825,000	825,000	0	0
Armco Alloy Steel Corp.	20,730	20,730	0	0	Oregon Steel Mills	120,000	120,000	0	0
Armco Co., A. M.	90,000	75,000	+15,000	+20.0	Pacific States Steel Corp.	216,000	181,770	+34,230	+18.8
Armco Shops, Inc.	14,500	12,000	+2,500	+20.8	Pittsburgh Steel Co.	1,320,000	1,404,000	-84,000	-6.0
Armco Iron Works Inc.	58,800	58,800	0	0	Porter Co. Inc., H. K. (Total) ..	208,600	67,500	+141,100G	+209.0
Armco Steel Co.	86,600	85,800	+800	+0.9	Connors Steel Div.	199,000	67,500	+131,500G	+194.8
Armco Fuel & Iron Corp.	2,829,500	2,471,500	+358,000	+14.5	Vulcan Crucible Steel Div. ...	9,600	.....	+9,600H	....
Armco Tool Steel Co.	6,600	6,600	0	0	Republic Steel Corp.	11,047,000	10,262,000	+785,000	+7.6
Armco Steel Corp.	420,000	394,000	+26,000	+6.6	Roanoke Electric Steel Corp.	24,000	none	F	....
Armco Steel Corp.	660,000	618,380	+41,620	+6.7	Rotary Electric Steel Co. ....	.....	425,000	C	....
Armco Steel Co. of America ...	1,423,400	1,351,400	+72,000	+5.3	Sharon Steel Corp.	1,898,000	1,550,000	+348,000	+22.5
Armco Steel Corp.	1,500,000	1,290,000	+210,000	+16.3	Simonds Saw & Steel Co.	21,600	21,600	0	0
Armco & Sons Inc., Henry ....	.....	25,000	B	....	Southern Electric Steel Co.	66,000	none	F	....
Armco Stainless Steel Corp.	50,000	32,000	+18,000	+56.2	Southwest Steel Rolling Mills ...	45,000	45,000	0	0
Armco Steel Co.	117,600	89,890	+27,710	+30.8	Stanley Works ....	.....	188,280	I	....
Armco Steel Corp.	500,000	500,000	0	0	Texas Steel Co.	70,450	36,000	+34,450	+95.7
Armco Forge & Steel Corp.	234,000	234,000	0	0	Timken Roller Bearing Co.	700,000	648,000	+52,000	+8.0
Armco & Sons Co., A.	33,600	33,600	0	0	Union Electric Steel Corp.	26,760	26,760	0	0
Armco Sterling Inc.	20,040	20,040	0	0	United States Steel Corp. (Total)	39,582,000	38,877,000	+705,000	+1.8
Armco Motor Co.	1,877,400	1,755,000	+122,400	+7.0	Central Operations	26,620,000	26,305,000	+315,000	+1.2
Armco City Steel Co.	1,200,000	1,290,000	-90,000	-7.0	American Steel & Wire Div. ...	2,275,000	2,275,000	0	0
Armco Steel Co.	100,750	100,750	0	0	Columbia-Geneva Steel Div. ...	2,679,000	2,490,000	+189,000	+7.6
Armco Steel Co.	55,550	55,550	0	0	National Tube Div.	4,011,000	3,810,000	+201,000	+5.3
Armco Steel Corp.	12,000	12,000	0	0	Tennessee Coal & Iron Div. ...	3,997,000	3,997,000	0	0
Armco Steel Co.	5,500,000	5,000,000	+500,000	+10.0	Universal-Cyclops Steel Corp. ...	70,160	70,160	0	0
Armco Steel Co.	1,200,000	1,000,000	+200,000	+20.0	Vanadium-Alloys Steel Co.	12,000	12,000	0	0
Armco Iron Works	102,000	102,000	0	0	Colonial Steel Co.	30,000	30,000	0	0
Armco Steel Co.	35,740	33,490	+2,250	+6.7	Vulcan Crucible Steel Co. ....	.....	9,600	H	....
Armco River Steel Corp.	183,190	198,000	-14,810	-7.5	Washburn Wire Co.	93,000	93,000	0	0
Armco & Laughlin Steel Corp. ...	6,600,000	6,166,500	+433,500	+7.0	West Virginia Steel & Mfg. Co. ...	.....	72,000	J	....
Armco Steel Div.	300,000	.....	C	....	Wheeling Steel Corp.	2,200,000	2,130,000	+70,000	+3.3
Armco Mfg. & Supply Co.	37,500	37,500	0	0	Wickwire Bros. Inc.	30,300	20,800	+9,500	+45.7
Armco Steel Corp.	76,500	76,500	0	0	Youngstown Sheet & Tube Co. ...	6,240,000	5,520,000	+720,000	+13.0
Armco Steel Corp.	1,536,000	1,536,000	0	0	Total	133,459,150	125,828,310	+7,630,840	+6.1
Armco Steel & Wire Co.	450,000	425,000	+25,000	+5.9					
Armco Steel Co.	34,020	34,020	0	0					
Armco Iron Co.	38,000	38,000	0	0					

Capacity was owned in 1955 by Merritt-Chapman & Scott Corp.'s Newport Steel Corp.
Capacity was acquired and abandoned in 1956 by H. K. Porter Co. Inc.
Capacity in 1955 was owned by Rotary Electric Steel Co. and purchased in 1957 by Jones & Laughlin Steel Corp.
Capacity is now owned by Acme-Newport Steel Co.

E Entered business in 1956.
F Entered business after Jan. 1, 1955.
G Includes acquisition of West Virginia Steel & Mfg. Co.
H Vulcan Crucible Steel purchased in 1955 by H. K. Porter Co. Inc.
I Capacity purchased by Northeastern Steel Corp.
J Capacity purchased by Connors Steel Div., H. K. Porter Co. Inc.



The Eisenhower Lock in the St. Lawrence Seaway begins to take shape at Massena, N. Y.

Seaway Opens Next July

But full use must await dredging of Montreal channels, scheduled to be finished in 1959. U. S. dredging will be completed next year. Fight over toll rates begins to take shape

THE OFFICIAL opening of the U. S. segment of the St. Lawrence Seaway will come in July, 1958. American contractors, working on \$92.6 million worth of projects, report their job is better than 60 per cent completed.

Boom Two Years Away—The U. S. opening will not increase ocean traffic into the Great Lakes next year. Officials of the St. Lawrence Seaway Development Corp. expect the "fourth seacoast" boom to start in 1959. Shifting to the U. S. channel for 14-ft shipping in 1958 will only require the closing of the present Canadian channel. The Canadian channel will be flooded to make the great power

pool which is expected to help new industry grow along the St. Lawrence River.

Canada expects to have the Montreal channels dredged to 27 ft when the ice breaks up in 1959. U. S. channels will be ready for 27-ft shipping next year, but must wait for Montreal.

Progress Report — Ports along the lakes are readying their harbors for this traffic (STEEL, Feb. 4, p. 63). Bulk cargo will dominate for many years. By the middle '60s, officials think a shift to general cargo will start. How much comes through will depend upon how fast midwest industries take to the seaway.

Two Opposites—Their basic consideration will be the cost of using it. The long expected fight in Washington is starting to shape up. At opposite poles: 1. Those who would have the seaway completely self-supporting. 2. Those who believe it should be subsidized by the U. S.

The corporation is expected to favor a system of charging both by ship size and cargo. Elimination of either method would discriminate since large ships will have to operate only partly loaded to navigate the 14-ft channels. A combination rate will encourage more shippers.

Battle Lines — Two regional groups are behind the dispute. Midwest users (the Great Lakes-St. Lawrence Seaway Association) claim the Atlantic and Gulf Coast group (the National Committee for a Nonsubsidized Seaway) is just against the seaway.

Neither wants the seaway to be self-supporting or wholly subsidized. They simply want higher

lower tolls than the corporation
ans to call for.

Users, backed by such firms as
Ford Motor Co., Chrysler Corp.,
and Republic Steel Corp., are led
by Rep. John Blatnik (D., Minn.)
and Sen. Charles Potter (R., Mich.)
on Capitol Hill.

Rep. George Fallon (R., Md.), a
member of the House Public Works
committee, heads the other camp.
He charges that users will try to get
Congress to: 1. Turn the seaway
over to the Corps of Engineers for
maintenance and operation (and
eliminate the need for tolls). 2. Or
provide an outright subsidy. 3. Or
lower tolls so that the seaway will
not be paid off for 100 years.

The Law—It calls for the seaway
to be paid off in 50 years. (It
has borrowing authority up to
\$140 million.) The development
corporation acts directly under the
president and may charge tolls as
it sees fit. Complaints can be
brought against the corporation's
policies at public hearings. Pre-
sumably, Congress would step in to
change the law any time it felt
pressures on the corporation were
getting out of hand.

In Washington and Chicago last
week, seaway users and competi-
tors compared notes on tolls. Cor-
poration officials may be consider-
ing a low tariff at the beginning
of the project to take care of "the
developmental period," a higher
tariff later on. The Association of
American Railroads opposes that
move. It wants the seaway paid
for in 50 years and at a constant
rate. Users believe such rates
could keep traffic away.

Costs—Lewis G. Castle, seaway
corporation head, estimates annual
maintenance and operation costs of
the U. S. seaway at \$2 million:
"There is a fair possibility that
this estimate can be reduced." He
expects the seaway to meet that
obligation from the beginning al-
though it may operate at a "book
deficit" (interest rates on the cor-
poration's borrowings) during an
initial development period."

Findings — E. Reece Harrill,
chairman, seaway tolls committee
of the corporation, told users about
a survey of shipowners and opera-
tors, ports, railroads, and interested
government agencies. A majority
favor a minor charge on a vessel's
registered tonnage with the prin-

New Plant and Equipment Expenditures

(Millions of dollars)

	Year		Fourth Quarter	
	1957*	1956	1957*	1956
Manufacturing	16,191	14,954	4,089	4,428
Durable goods	8,218	7,623	2,096	2,339
Primary iron, steel	1,684	1,268	468	447
Primary nonferrous	875	412	259	152
Electrical machinery & equipment	653	603	191	199
Machinery, except electrical	1,257	1,078	332	330
Motor vehicles & equipment	1,194	1,689	247	453
Transportation equipment, excluding motor vehicles	596	440	152	140
Stone, clay & glass	604	686	158	201
Other durable goods	1,355	1,447	289	417
Nondurable goods	7,973	7,331	1,993	2,089
Mining	1,242	1,241	290	346
Railroads	1,457	1,231	344	332
Transportation, other than rail	1,751	1,712	454	450
Public utilities	6,254	4,895	1,716	1,452
Communication, commercial & others ..	10,135	11,048	2,308	2,830
Totals	37,030	35,081	9,201	9,838

*Estimated.

Source: Department of Commerce, Securities & Exchange Commission.

Is Spending Leveling Off?

● Capital spending will set a record in 1957, indicates a survey by the Commerce Department and Securities & Exchange Commission.

This year's \$37 billion will be 6 per cent better than last year's total. Economists wonder if a temporary peak hasn't been reached. They point to declining rates of spending during 1957. The third quarter saw a peak annual spending rate of \$37.23 billion (seasonally adjusted); the fourth quarter will fall off to \$37.17 billion (seasonally adjusted).

Public utilities will record the best gain this year: Up 28 per cent from last year. Railroads will spend 18 per cent more; manufacturing industries, 8 per cent more.

capital charge being levied against the cargo.

Another problem: How much should be charged for partial use of the seaway? The answer may be in mileage or number of locks passed through.

The only specific recommenda-
tion for tolls so far has come from
the AAR: 50 cents a ton on bulk

commodities; \$1.25 a ton on gen-
eral cargo.

Outlook—Seaway officials do not
look for any delay because of the
toll question. They think it will
help publicize the seaway and
alert all interested parties to the
need for reaching a sensible con-
clusion. Their argument: The sea-
way will eventually benefit all.



Chain floor conveyers move 10 million pieces a month

Timken Integrates Plant

THE WRAPS are off Timken Roller Bearing Co.'s bearing plant at Bucyrus, Ohio.

Exact scheduling of production is the eye-catcher: The automatic facility is integrated with a shipping center controlled by IBM computers.

From the time a load of tubes is placed on the screw machine stock rack until the finished and wrapped product is placed in the shipping box, all operations (including final gaging) are automatic.

Efficient operation is assured by the IBM 650 at the Canton, Ohio, office. The computer calculates the inventory status of an item in less than 2 seconds.

Production — The 180,000 sq-ft plant can turn out 33 million cups and 27 million cones annually. Parts are made on 11 production lines, using equipment designed for Timken. Single-purpose screw machines and grinding equipment conserve space. Machines equipped with carbide tooling can produce eight times as many cups per hour as their predecessors.

Built-in quality control keeps an accurate check on the parts and machines throughout production.

Use of Computer — The major task of the IBM 650 is to keep track of inventory, scheduled production, and unshipped customer orders. With that information, Timken can quickly determine whether a customer's shipping date request can be met.

Shipping Center—IBM cards are sent to the center at Bucyrus, along with bearings and parts from the other plants. The building has six receiving docks, 12 truck loading docks, and two railroad loading docks.

Incoming boxes are placed on a conveyer and moved to an unloader which also stacks the empty pallets. The boxes pass the IBM key punch operator.

The item number and quantity in each box are punched on the card, which is slipped into the end of the box. Boxes move to the main aisle and are placed in storage. Every vacant space in the storage area has an IBM location card.

Picking the product is essentially the reverse of the storage method.

As a result of the careful scheduling, orders are completed at predetermined time regardless of how many different sizes are involved. Trucks arrive at the dock at a set time, and the entire order can be loaded immediately.

Ideas on Display

Show at Cleveland points up why industry spends \$6 billion annually on instrumentation

SYSTEMS engineering brought 30,000 people to Cleveland last week.

At the twelfth annual Instrument Conference, sponsored by the Instrument Society of America, they heard seminars discuss instrumentation for systems control, and they crowded the exhibit halls.

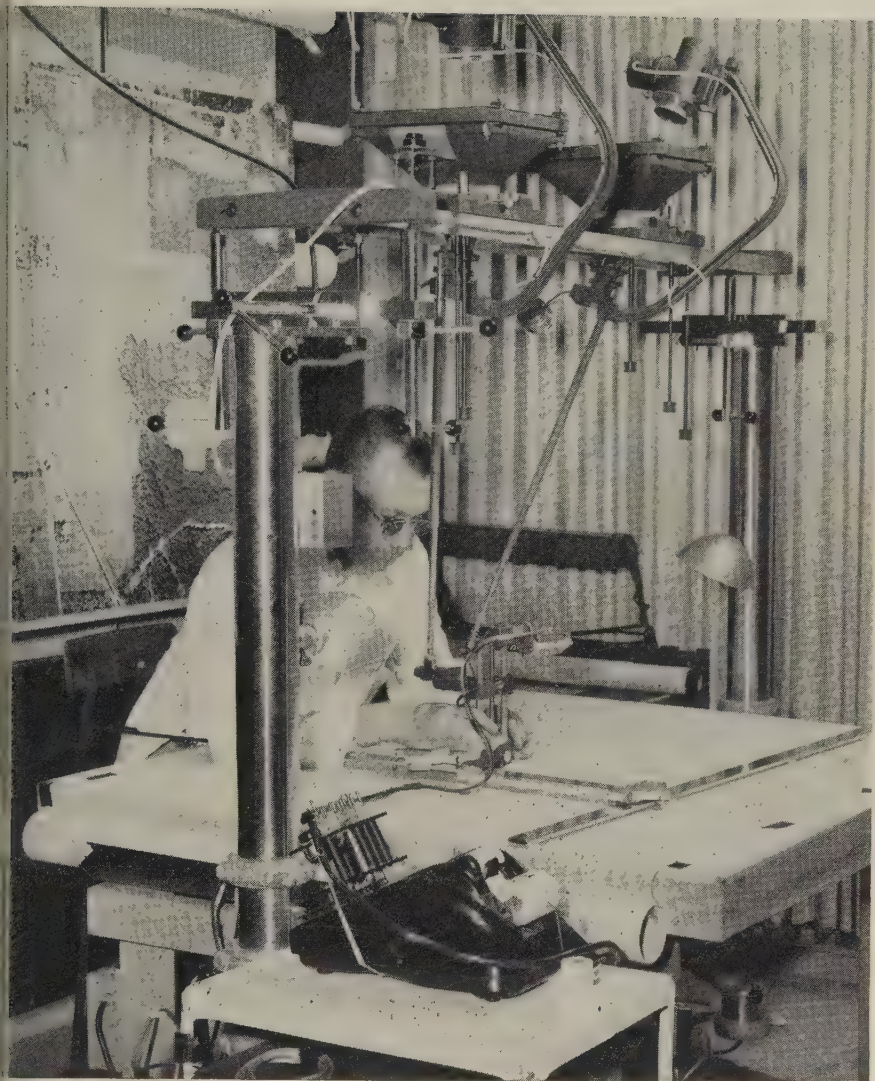
Growth — Speaking before the opening seminar, Dr. Simon Ramo, executive vice president of Ramo, Wooldridge Corp., Los Angeles, outlined the reasons system engineering has become so important.

"The job of integrating a large number of men and instruments as distinct from the invention and design of individual items of instrumentation; the over-all answer to the problem of the complete operation; the breaking down of the problem into harmonious, consistent parts."

Hardware — The systems engineer has a fantastic job if the variety of components displayed in the exhibits was any indication. Suppliers of formed parts, wire, alloys, tubing, and thin strip found inquiries running to extreme tolerances, improbable physicals, and imaginative combinations.

Some impressions from the exhibit halls: The vacuum tube is a back number . . . this is the stronghold of small business . . . miniaturization is all important . . . ideas grow like weeds here.

Some of the ideas displayed: A remotely operated pipe coupling; a nonparallax instrument dial; an automatic wear indicator; a low cost, pressure sensitive element made of tube-in-strip; an electronic guard for machinery, which uses a radio-frequency field.



James H. Angel, chief engineer of Kucera & Associates Inc., uses a modified Kelsh Plotter to compute the volume of a stockpile photographed from the air. Spot elevations are relayed electronically to the adding machine

Aerial Photos: Inventory Aid

MAKING inventory of coal, iron ore, limestone, and other bulk materials is easier today than ever before, thanks to aerial photography. The method developed by Robert H. Kucera, Cleveland pilot and geologist, is said to be faster, more accurate, and often less costly than the ground survey system.

Instead of computing the volume of an ore pile by driving stakes and taking transit readings, Mr. Kucera photographs it from 1500 ft and makes his calculations in a laboratory.

So precise is his method that he

can detect a variation of 1.2 in. in stockpile elevation. An inventory of bundled scrap, considered nearly impossible to appraise by any method, proved to be accurate within 1 per cent, convincing a major steel producer that he should use the system for scrap as well as other inventories.

Advantages—1. Aerial surveys reduce the margin of error from 8 per cent, which is not unusual for ground surveys, to 1 per cent. 2. They permit computation of inventory at a specific moment, eliminating worries about stockpile ad-

ditions or withdrawals. 3. They require less time than ground surveys and often cost less. (Some inventories can be completed within 48 hours. The cost of surveying a Pittsburgh area iron ore pile, 2000 ft long by 250 ft wide, would be about \$1200.) 4. Since a survey is made by a disinterested party, it's less likely that figures will be juggled to agree with inventory records. Price Waterhouse & Co., the accounting firm, is particularly enthusiastic about this feature.

Founded in 1947, Kucera & Associates Inc. began stockpile inventory work in 1950. Its first client was American Steel & Wire Div. of U. S. Steel Corp., Cleveland. Other firms for which it now makes regular surveys include Jones & Laughlin Steel Corp., Pittsburgh; Youngstown Sheet & Tube Co., Youngstown, and International Minerals & Chemical Corp., Chicago.

Other Applications—The technique has been successfully applied to strip mining and estimating the amount of earth to be moved in excavating or leveling. Especially important to those prospecting for minerals is the fact that airborne surveyors don't excite speculation as land survey teams would.

How It's Done—After he takes a series of photographs, Mr. Kucera returns to his laboratory, where he makes glass positives from the photo images. They are inserted in a Kelsh Plotter and projected to a small white screen, where they're viewed in three dimensional clarity. The screen is raised or lowered until a pinpoint of light at its center appears to be resting on the surface of the stockpile. The spot elevation is read from a gage which is synchronized with the screen's vertical adjustment and calibrated with known elevations around the stockpile.

By applying a 10-ft grid to the stockpile and checking the elevation at the center of each square, it's possible to determine the average height for every 100 sq ft of the stockpile surface. Totaling the elevation figures electronically (a method originated by Mr. Kucera) and dividing by the number of readings gives the average elevation of the pile. Average elevation times square foot area gives cubic volume.

Small Business Outlook: Primes Keep Contracts

ASKED about chances of increased defense business for small firms in 1958, a top small business-Defense Department liaison man comments: "We are worried." Says a staff member of the Senate Small Business Committee: "We are unhappy."

Defense reports small businesses reaped about 20 per cent of military prime contracts in fiscal 1957. It means there was no gain in number of contracts from the 1956 figure, although dollar value increased 9 per cent.

So Small Firms Will Get More Data

In an era of steady, rather than rising, defense work, the government can help by making more drawings and engineering data available to small business. The Senate Small Business Committee reports 567 items of military procurement (from fuel pump repair kits to motor-generators) are bought by Defense from a single source. None of these items, says the committee, was made by small firms because there were no specifications available from Defense for potential bidders.

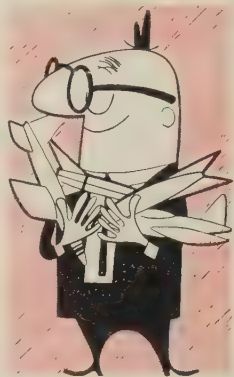
Urged by the committee, Defense's assistant secretary for supply & logistics, Perkins McGuire, has established a special office to provide more data to suppliers. Ray Harris, a specifications specialist, is in charge. If Mr. Harris is lucky, guess some Pentagon observers, he will be barely able to keep small business' share of defense work from declining next year. There is little chance for an increase.

Advice to small firms losing out to primes that are holding work they once subcontracted: Get the word into Washington. There is a good chance for curative legislation next year. The Senate committee, since July 1, has received almost 50 complaints from small firms which have lost out to primes.

Pressure Isn't Needed: Just Competition

Sen. John Sparkman (D., Ala.), head of the committee, thinks about 25 per cent of defense procurement should go to small outfits. His basic contention: You don't have to legislate a percentage; just give small firms the opportunity to compete.

A staff member admits it's good business for prime contractors to hold as much work for themselves as they can, but when it's done at a cost to the taxpayers, there is no excuse. Incidentally, the committee is also looking into methods used by primes in



reporting their subcontracting to Defense Department and the way Defense reports its small business figures.

Roadblock to Small Business Help?

The Federal Reserve Board may be trying to wiggle out of a decision on whether small business needs aid from Congress in raising capital. FRB says it will study the situation and make a report early in 1959.

That would effectively block attempts of Capitol Hill friends of small business to get the FRB on their side in next year's legislative battle over small business taxes. Chances are that real help for small companies (better depreciation rates, an enlarged SBA program, lower estate taxes) won't get through until the FRB has its say.

Capitol Notes

Power needed to operate the nation's public water utilities will be 28 million kw-hr by 1975, compared with 15 million kw-hr in 1953 . . . The Navy will launch its fifth nuclear submarine next month . . . Know-it-alls are betting that there will be more Jupiter than Thor in the missile to be born of Secretary Wilson's October decision.

U. S. Buyers Are Watched

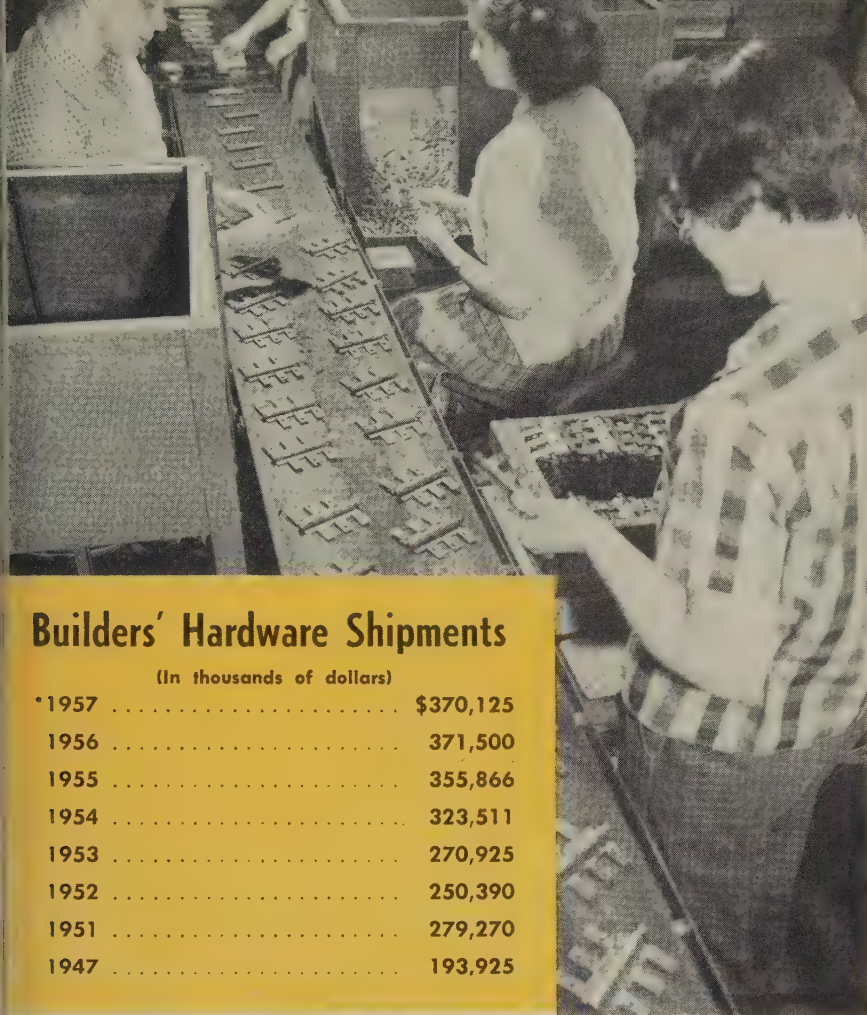
"No government purchasing agent should be able to say that he did not know someone else in the government had excess property while he is purchasing the same property," warns Sen. Lyndon Johnson's (D., Tex.) Preparedness Investigating Subcommittee.

The subcommittee recommends: 1. Some method of enforcing present regulations for disposal of surplus property. 2. Creation of a system for crosschecking surpluses among the armed services as well as within them. Consensus: Despite much talk in recent years about saving the taxpayer's dollar, we are still buying with one hand what we sell with another.

Outlook: Next year, Congress will move into the Defense Department in full force to try to hold the economy line established by the \$38 billion defense spending ceiling. Senator Johnson's subcommittee and Rep. F. Edward Hebert's (D., La.) look at aircraft engine makers' profits this year portend some investigations next year.

Housing Formation Rolls Along

The Housing & Home Finance Agency has happily announced the formation of the 50 millionth U. S. household. All metalworking industries can take heart from the trend figures from the Census Bureau: In 1954, there were 46.9 million households; in 1955, 47.8 million, in 1956, 48.1 million. If that trend continues, there will be another 5 million households in six years.



Builders' Hardware Shipments

(In thousands of dollars)

*1957	\$370,125
1956	371,500
1955	355,866
1954	323,511
1953	270,925
1952	250,390
1951	279,270
1947	193,925

*Estimated by STEEL.

McKinney Mfg. Co.

Builders' Hardware Sales Big

slowdown in shipments for housing has been offset by gains in commercial, institutional, and public installations. Prices are up, but competition is aggressive

BUILDERS' HARDWARE manufacturers expect to exceed \$370 million in sales for the second year in a row. Several larger producers of locks, locksets, and the 3 other products in this category will have a record sales year.

Leo J. Pantas, vice president and general manager, Yale Lock & Hardware Div. of Yale & Towne Mfg. Co., White Plains, N. Y., says: Yale lock and hardware volume appears to be headed for the biggest year in the company's 89-year history. Shipments are substantially higher than those for

the same period last year, and if this pace continues, an all-time sales record will be established."

The table above shows that shipments have nearly doubled in the last ten years. Sales for commercial, institutional, and public installations are up 10 to 15 per cent this year.

Problems—Despite high over-all sales, some shadows dim the outlook. Housing shipments are down 20 to 25 per cent. Mergers and low margins have reduced the number of producers to around 170, a loss of 5 per cent.

An average 5 per cent price increase is being maintained with difficulty because of sharp competition at all price levels.

Other facets of the situation are stated by J. E. Fox Jr., merchandising manager, Sargent & Co., New Haven, Conn.:

"Builders are demanding higher grade hardware, notably for housing and commercial construction where unit dollar volume of sales is higher. Cheaper lines are losing ground, and demand for stainless steel products is heavier."

Expanding Lines—Sargent has broadened its line of locks and hardware. Higher prices and better sales of quality products are more than offsetting the 20 per cent decline in housing demand.

The company has designed locks with adhesive vinyl inserts that permit the home owner to change color combinations when redecorating.

Aluminum, dull bronze, polished brass, and dull chrome give 24 color combinations in the higher priced line. Rectangular and square escutcheons (including a large size with a personalized monogram) are separate accessories used in the lower priced residential locks.

Yale & Towne has also been expanding. At midyear, a Salem, Va., unit started shipments of hardware used as components in the manufacture of metal and wood windows. A fifth plant, at Monroe, N. C., will be completed by the end of this year.

American Hardware Corp., New Britain, Conn., increased sales 6.9 per cent in the first half. Incoming orders increased 8.5 per cent, and the unfilled order backlog increased 9.7 per cent.

Consolidating—The firm has acquired Kwikset Locks Inc., Anaheim, Calif. The move brings it into the low-cost residential lockset market. Up to this time its primary distribution has been in hardware for office buildings, hotels, schools, hospitals, commercial construction, and higher priced residences.

Two of the largest government contracts for hardware installations (the new Atomic Energy and State Department buildings) were awarded to American Hardware.

Price Squeeze—The larger, more

diversified manufacturers are getting a bigger share of the market than smaller producers.

Manufacturers and distributors caught in the price squeeze on lower priced housing lines are generally improving quality, both in materials and assembly control.

Contract distributors, selling larger installations to architects' plans and specifications, account for over one-third of total sales. This group of 500 is 10 to 15 per cent ahead of 1956 volume.

Approximately 90 per cent of all production is sold through distributors, wholesalers, hardware dealers, and lumberyards.

In commercial and institutional construction, builders' hardware represents 2 per cent of the total material costs, while in housing the ratio is only 0.5 per cent.

Top Sellers — Locks, locksets, and lock-trim sales account for one-fourth of builders' hardware volume, about \$93 million. Sales of sliding overhead door hardware are up sharply, climbing from \$16 million to \$62 million in ten years.

Builders' hardware accounts for about 35 per cent of hardware sales, which will be in excess of \$1.1 billion this year.

AEC Invites Reactor Bids

The Atomic Energy Commission will accept proposals for the engineering design of a natural uranium, gas cooled, graphite moderated nuclear electric power plant of 40,000 kw capacity until Sept. 23, 1957.

Qualified firms that have not received a specific invitation to submit such a proposal should address the Division of Reactor Development, U. S. Atomic Energy Commission, Washington 25, D. C.

Steel Wages Near \$3

An increase of 12.1 cents an hour over the June average hiked the steel industry's wage rate to a record \$2.983 in July. The figures do not include an average cost of 29 cents per hour for pensions, social security, and insurance.

The American Iron & Steel Institute states that the gain reflects wage increases granted by three-year labor contracts.



A white hot billet is pierced—the first step toward becoming a high-pressure container—at National Tube's Christy Park Works

Makes Gas Container

U. S. STEEL CORP.'S National Tube Div. is making seamless cylindrical steel containers to hold gases and chemicals at pressures up to 10,000 psi.

The corrosion - resistant cans, with wall thicknesses up to 3 in., are forged from white hot billets, or produced from seamless pipe or cupped plates. They are then drawn and machined. The ends of the cylinders are hot formed by spinning, swaging, or forging.

Size—Length varies from 3 to 80 ft. They range up to 30 in. in diameter.

Some are normalized and pass through a hydrostatic testing pro-

cess. Interior cleanliness is essential.

Uses—The cylinders are made at the Christy Park Works, McKeesport, Pa. They hold hydrogen, helium, and nitrogen to back up missile propellents. Other uses include hydraulic containers and welding tanks which hold helium and argon.

Cyclone Makes Fiberglass

Fiberglass screening is being made by the Cyclone Fence Dept. of U. S. Steel's American Steel & Wire Div. at Greensburg, Ind.

Vinyl-coated Fiberglass, with a

ensile strength of 250,000 psi, is woven into screening by a continuous process. The strands are used at over 300° F.

Advantages of the screening include lightness, heat and corrosion resistance, and visibility.

Nuclear Lab About Ready

Minnesota Mining & Mfg. Co. will complete construction of a small nuclear research center near St. Paul next month. It will include a nuclear materials laboratory for development of high temperature reactor materials and a gamma radiation facility.

American Lava Co., a Minnesota Mining subsidiary, will build a pilot plant in Chattanooga, Tenn., for production of ceramic fuel elements. The plant should be ready next spring, said R. A. McGinnis, vice president. Covering about 1000 sq ft, it will employ 20 initial-

More Power for Aluminum

An underground powerhouse, capable of generating about 745,000 kilowatts, is being built by Aluminum Ltd. at Chute des Passes, Que., on the Peribonka River.

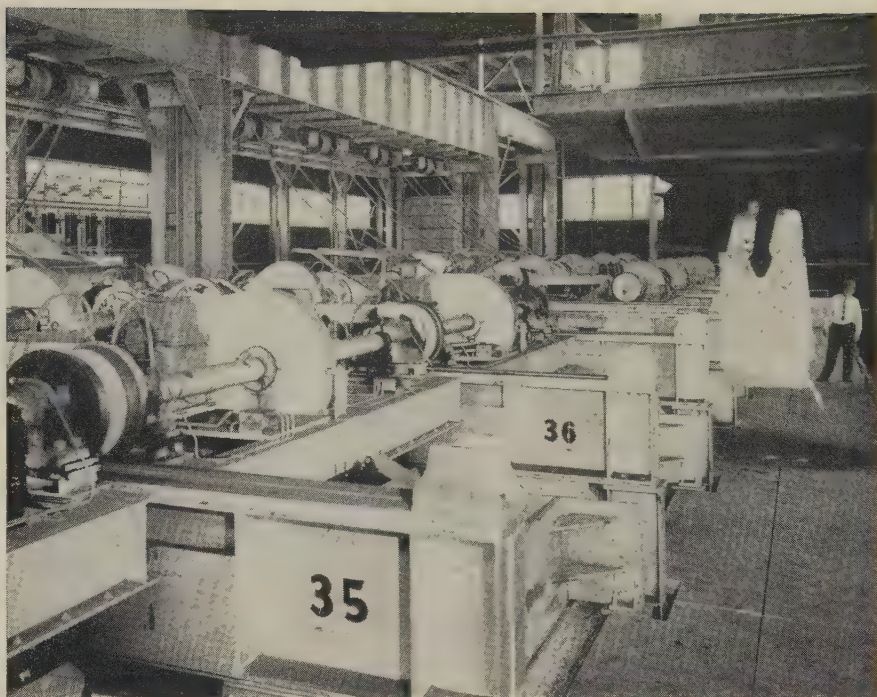
Five 200,000-hp generators will be installed at the end of a 6-mile tunnel. When completed (August, 1959), the facility will give Aluminum Ltd. about 3.57 million kilowatts in Canada. Cost: Over \$125 million.

S&T To Open Tube Mill

Youngstown Sheet & Tube Co.'s new seamless tube mill at East Chicago, Ind., will begin operations about Oct. 1.

The new facility, which eventually will employ at least 300 workers, is the first seamless installation at the company's Indiana Harbor Works. Currently the firm makes all its seamless pipe at Youngstown.

Seamless tubing is used by Youngstown's customers primarily for oil well casing. The new mill will make tubes ranging from 4½ to 9⅝ inches in outside diameter. A feature of the mill is a giant rotary furnace capable of handling as many as 200 billets at one time, raising their temperature to 2000° F.



An 8-ton ingot is lifted from one of Allegheny Ludlum's soaking pits

A.L. Balances Facilities

EIGHT FURNACES have substantially increased the soaking pit capacity of Allegheny Ludlum Steel Corp.'s Brackenridge, Pa., works. The gas fired furnaces are housed in a new, 10,000 sq ft building.

The installation is a major unit in a multimillion dollar program to bring the firm's stainless and electrical steel finishing facilities into balance with its steel melting capacity.

Electrically operated doors roll back to allow a crane to place ingots in the pits.

Removal of scale and ash from the heating chambers is facilitated by a bin arrangement underneath the pits.

Market for Self-Unloaders

A Bradley Transportation Co. freighter, the *M. C. Taylor*, is taking on three types of iron ore at Two Harbors, Minn., which it will try to self-unload at a lower lake port. If the experiment is successful, self-unloaders will be used to

haul iron ore, coal, and stone.

Ore shipments to lower lake ports totaled 58,269,067 tons up to Labor Day. That is 16 million tons more than were hauled in the same period of 1956.

Few Strikes in July

Strike idleness in the first seven months of this year was lower than it has been in any comparable period since 1945. In July it was the lowest for the month since 1951, reports the U. S. Department of Labor's Bureau of Labor Statistics.

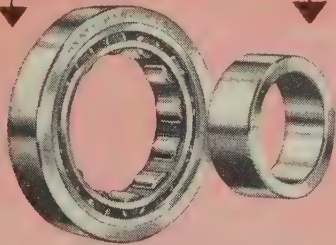
The 625 strikes in July (including those continuing from earlier months) directly involved 260,000 workers for 2.5 million mandays, compared with the 600 strikes in effect in June that idled 220,000 workers for 1,850,000 mandays.

Only one of the stoppages that began during July involved as many as 10,000 workers. The dispute, involving machinists and the California Metal Trades Association, continued into August.

There's a

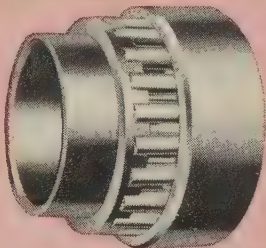
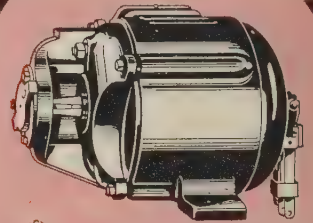
HYATT HY-ROLL

for every load...



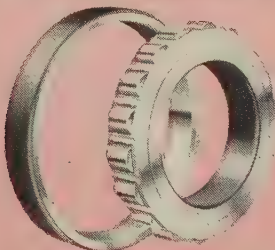
HY-LOAD
Series

Designed for a wide variety of radial loads, and light or intermittent thrust loads, these high-capacity bearings are made in four diameter series and fourteen major types.



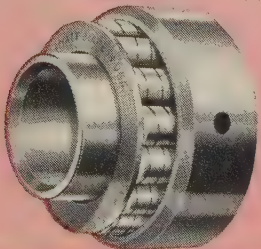
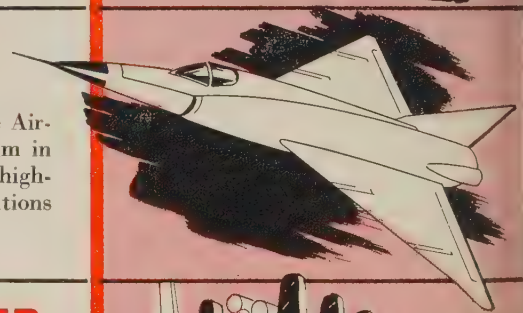
INDUSTRIAL INCH
Series

For heavily-loaded, slow-moving machinery, the Industrial Inch Series was designed to accommodate large diameter shafting where fractional dimensions are required.



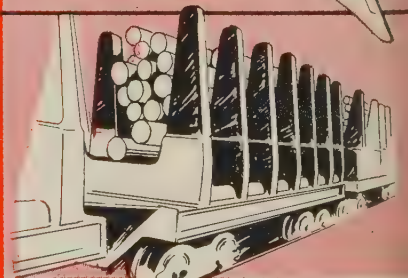
AIRCRAFT
Series

Available in over 100 sizes, the Aircraft Series attains the optimum in life-load combinations for ultra high-speed, high-temperature applications and maximum dependability.



WOUND ROLLER
Series

Specifically developed for maximum resistance to shock, abrasion and fatigue, these three-part, separable bearings can be used without the inner race when desirable.



If you would like the technical assistance of an experienced sales engineer, phone or write Hyatt Bearings Division, General Motors Corporation, Harrison, N.J.; Pittsburgh; Chicago; Detroit; Oakland, California.

HYATT HY-ROLL BEARINGS
FOR MODERN INDUSTRY

FOR REPLACEMENT BEARINGS, SEE YOUR HYATT INDUSTRIAL BEARINGS DISTRIBUTOR





New Job for Jim Nance:



... keep Mercury's sales up



... sell Lincoln's unit body

Nance Heads L-M Division

FORD MOTOR CO. has appointed James J. Nance, former vice president of marketing, to head its reunited Lincoln-Mercury Div.

The move came sooner than had been anticipated, but rumor had it for some time that the two divisions might be put back together again. Motordom is asking: What's the reason for the switch?

History—Lincoln and Mercury were joined as a single division in 1945 when Ford started its reorganization drive. In April of 1955 they were separated in an effort to capitalize on the booming medium-priced car market.

At that time, Ben D. Mills, company vice president, was named manager of the Lincoln Div. F. C.

Reith was appointed as Mercury's general manager. Mr. Mills will continue as a vice president and will be assistant general manager under Mr. Nance. Mr. Reith will be given another executive position in the company.

Reasons—Looking ahead, industry observers feel the move means Ford will give Lincoln and Mercury the hard sell.

Mr. Nance already has pulled in Joseph Bayne from the company's dealer policy board and made him general sales manager of the new division. More sales shifts are expected. Mercury, of necessity, will be upgraded now that it's tied more closely to the Lincoln line.

Space—This makes more room

for Edsel. Motordom already has felt the Edsel would compete too closely with Mercury under the old setup. The move is especially important because the medium priced market has stopped growing, and Ford doesn't want to overload this segment of the market.

Help Needed—Mercury needs to be pushed in '58. The car has been changed little. It will have to be merchandised to make money.

Lincoln also needs a lot of attention to make sure the public will buy the concept of unitized construction which Lincoln will introduce in 1958.

Sales of Ford's luxury car have slipped slightly, while those of Chrysler's Imperial have quintupled. The company can't let Lincoln drop to a poor fourth in the luxury car race.

Best Man—This sort of situation

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is made to order for Mr. Nance. He's long been hailed as a merchandising expert. Now he'll have a chance to prove it as far as the auto industry is concerned.

Mr. Nance made his marketing reputation during the 1930s in the appliance business, one of the reasons he was brought in as head of Packard Motor Car Co. in 1952. Unfortunately, he never had a chance to prove whether he could peddle cars.

By the time he had solved the other troubles Packard (later Studebaker-Packard Corp.) faced, there was no money or time left to try his merchandising techniques. (See STEEL, Apr. 30, 1956, p. 73.)

Now he'll have that chance. It could lead to a higher niche in the Ford hierarchy.

Outlook: If Mr. Nance is successful, you can expect results like these:

- Mercury will compete more directly against high priced Buicks and lower priced Chrysler Div. cars. Its super Park Lane series (for '58) should help.
- If the public goes for Lincoln's unitized construction, Mercury may be next to scrap the body and frame concept. It's highly doubtful that the costs of unit body building can be made to pay on the low volume Lincoln has.
- Plenty of changes in the Ford manufacturing setup would result. One possible solution: Edsel could take over Mercury assembly plants. Mercury would get its own assembly layout, or share the present Lincoln plant which has room for expansion.

Labor Faces Fight

It looks like the auto companies plan to fight back against the union this year as contract negotiations draw closer.

Their feeling seems to be that since labor already is in some disrepute because of Messrs. Beck and Hoffa, now is the time to push hard for public approval which would give them a bargaining edge.

The fight already has shown up in the car company replies to Mr. Reuther's proposals to cut car prices \$100 and in his efforts to hold precontract discussions on the short work week.

Usually, the Big Three don't engage in advance skirmishes.

The big questions: Will the fight lead to a strike? If it does, will the industry hold out?

Mr. Reuther won't pull a strike if he feels it will turn public approval farther away from him. That's the kind of attitude the car companies hope to foster in the next few months.

It's still too early to tell which way the fight will go, but it's obvious the industry is showing more spirit than it has for years.

Key to Sales: Labor?

Labor contracts favorable to the auto companies could insure a successful sales year in 1958.

Car builders already have indicated such as increase is expected (6.5 million unit sales), but they don't sound as confident as they have in recent years.

Part of this is because they've guessed wrong before. Part of it is the threat of inflation which is making them cautious.

Vauxhall Prices Set

The Pontiac Div. of General Motors Corp. has announced the Vauxhall Victor Super will carry list prices of \$1812 (New York), \$1881 (Detroit), and \$1994 (San Francisco).

The car will go on sale at Pontiac dealers this month, reports S. E. Knudsen, Pontiac's general manager.

The Victor is made for GM in England. Another GM overseas product, the Opel, will be introduced soon by Buick.

The \$1800 list price tag on the Victor is \$1000 more than the delivered price for a Volkswagen. It comes close to the list price of the Chevrolet and low priced Ford.

Ford Scraps Monarch

Ford's Edsel will replace the Monarch, which the company sells only in Canada. Rhys M. Sale, president of Ford Motor Co. of Canada Ltd., says the Monarch will be discontinued at the end of the current model run (this month).

It was similar to the Mercury and contained most of the same parts, although the Mercury also is marketed in Canada. Mr. Sale also indicated he expects Mercury-Lincoln sales will be boosted by the addition of the top Mercury series, the Park Lane.

1957 Model Runs End

The 1957 model runs are over, and most of the tallies are coming in. Buick and Packard suffered the greatest drop in output, compared with 1956 performances. The GM division built 297,733 cars this year, compared with 410,865 last year. Packard dropped from 12,875 to 4654 this year. The greatest increase was Chrysler's Imperial: 30,166 units this year, versus 6548 in 1956.

As the 1958 model run opens, Edsel has assembled 29,354 cars (by Sept. 8).

Exhaust Notes

• Willys Overland Export Corp., distributors in Europe, Africa, and the Middle East, will hold its annual business meeting in Paris, Oct. 3-13. The company will introduce the Forward Control Jeep FC 170 at this meeting.

• American Motors Corp. has invited 12 of the nation's top economists to advise it on the economic aspects of 1958 collective bargaining. The meeting is tentatively scheduled for late September.

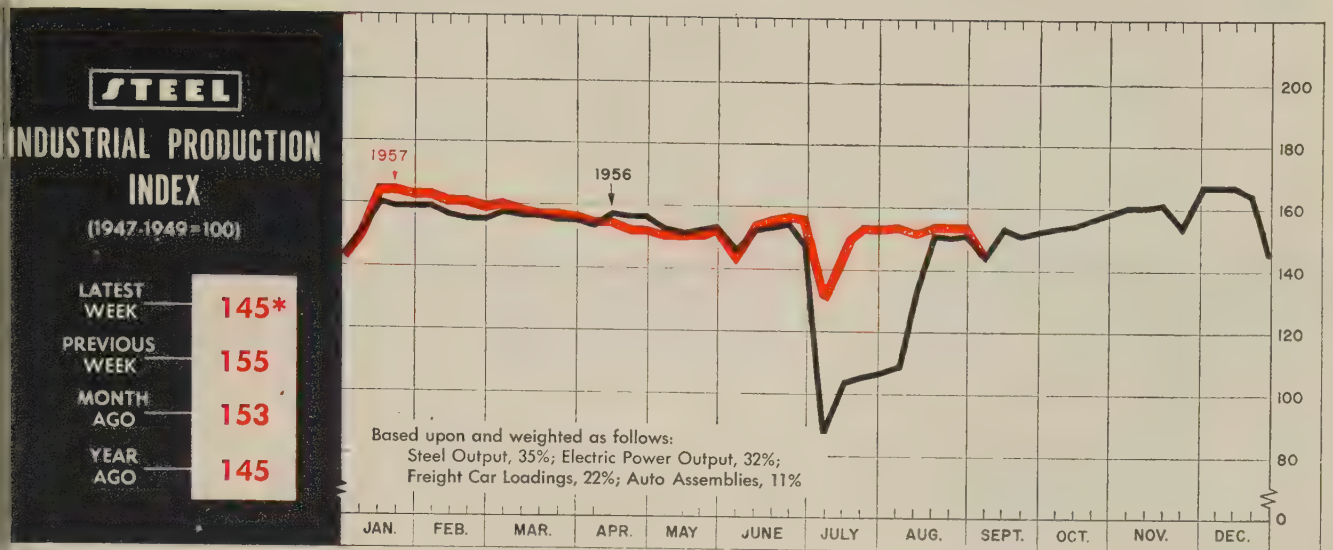
U.S. Auto Output

Passenger Only

	1957	1956
January	642,089	612,078
February	571,098	555,596
March	578,826	575,260
April	549,239	547,619
May	531,365	471,675
June	500,271	430,373
July	495,629	448,876
August	524,854	402,575
8 Mo. Total	4,393,371	4,044,052
September		190,726
October		389,061
November		581,803
December		597,226
Total		5,802,808

Week Ended	1957	1956
Aug. 10	118,864	108,167
Aug. 17	117,598	98,348
Aug. 24	123,130	69,676
Aug. 31	118,563	58,166
Sept. 7	89,383†	47,827
Sept. 14	74,350*	64,350

Source: Ward's Automotive Reports.
†Preliminary. *Estimated by STEEL.



Week ended Sept. 7.

Near-Record Fourth Quarter Shaping Up

EXPECTATIONS for the fourth quarter are running high. Some businessmen don't see how it can miss being the best quarter on record. Others think it will just miss the level of 1956's last quarter. A few speak "guardedly" of better business levels.

The groundwork for this upswing is being established now, and many economists and businessmen believe that some clue to it will be found in steel mill operations, auto production, and home building. All three show signs of strengthening at the end of the year.

Detroit Guesswork—Most crystal balls are focused on motordom because of the coming new models and because dealers' inventories are at near record levels. Completely new cars will be the exception rather than the rule this year. But facelifts will be extensive. Both factors account for the optimism regarding the close out of '57s and the introduction of '58s. August sales were good. The daily average swelled as the month progressed and "deals" became more enticing.

The key question for '58 is public resistance to price increases, which could be almost as big as they were last year. Automakers feel that practically all the cars sold at record-setting 1955 are now paid for—a point they miscalculated a

year ago. A sizable replacement market is in prospect, but the difference between '55 and '58 prices could hurt it. The industry is watching the Edsel for signs of resistance because it gives an indication of the 1958 price pattern.

Suppliers say that Detroit is optimistic. Orders for parts stand-

ard on both '57s and '58s are strong, indicating that motordom's high inventories, which plagued partmakers this year, are nearly worked off. Orders from steel mills are beginning to pick up, too. Officially, automakers are planning operations for about the same pace as last year's, but nobody would

BAROMETERS OF BUSINESS

INDUSTRY

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
Steel Ingot Production (1000 net tons) ² ...	2,126 ¹	2,073	2,477
Electric Power Distributed (million kw-hr) .	11,400 ¹	12,147	10,955
Bituminous Coal Output (1000 tons)	9,995 ¹	9,880	9,600
Petroleum Production (daily avg—1000 bbl) .	6,750 ¹	6,766	7,037
Construction Volume (ENR—millions)	\$314.1	\$436.5	\$243.9
Auto, Truck Output, U. S., Canada (Ward's)	110,354 ¹	142,982	66,618

TRADE

Freight Car Loadings (1000 cars)	655 ¹	745	680
Business Failures (Dun & Bradstreet)	262	260	237
Currency in Circulation (millions) ³	\$31,145	\$30,998	\$30,787
Dept. Store Sales (changes from year ago) ³	+5%	+1%	+2%

FINANCE

Bank Clearings (Dun & Bradstreet, millions)	\$18,202	\$20,496	\$16,828
Federal Gross Debt (billions)	\$273.8	\$273.7	\$275.6
Bond Volume, NYSE (millions)	\$12.6	\$17.6	\$15.6
Stocks Sales, NYSE (thousands of shares) .	5,479	9,998	7,154
Loans and Investments (billions) ⁴	\$86.5	\$87.0	\$85.6
U. S. Govt. Obligations Held (billions) ⁴ . . .	\$24.9	\$25.3	\$26.6

PRICES

STEEL's Finished Steel Price Index ⁵	239.15	239.15	225.71
STEEL's Nonferrous Metal Price Index ⁶	209.3	213.7	262.7
All Commodities ⁷	118.1	118.0	114.8
Commodities Other Than Farm & Foods ⁷ . . .	125.6	125.6	122.4

*Dates on request. ¹Preliminary. ²Weekly capacities, net tons: 1957, 2,559,490; 1956, 2,461,893. ³Federal Reserve Board. ⁴Member banks, Federal Reserve System. ⁵1935-1939=100. ⁶1936-1939=100. ⁷Bureau of Labor Statistics Index, 1947-1949=100.

you can cut your GLOVE COSTS



with the authorized **JOMAC** COST-REDUCTION PLAN

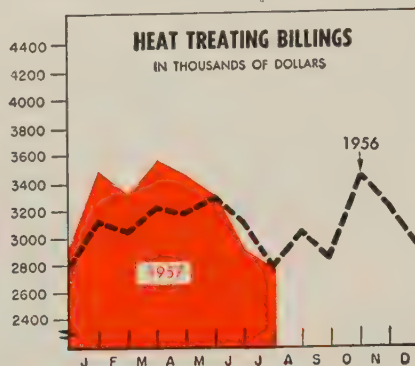
- 1 Jomac will analyze your working conditions and glove requirements
- 2 You will receive a complete report and specific Jomac Glove recommendations
- 3 Test and compare the Jomacs with your present gloves—and the net cost figures speak for themselves

Your glove costs *can* be reduced. To make *profitable* use of this plan, write to Jomac Inc., Dept. E, Philadelphia 38, Pa., and say "Reduce my glove costs."

JOMAC INDUSTRIAL GLOVES

Plants in Philadelphia, Pa., and Warsaw, Ind.
In Canada: Safety Supply Company, Toronto

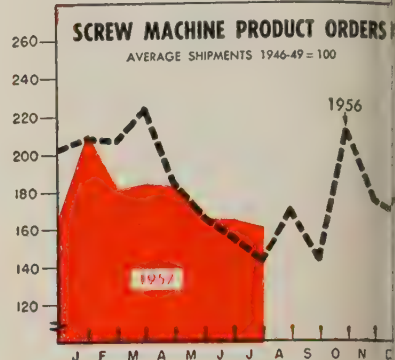
THE BUSINESS TREND



	1957	1956	1955
Jan.	3,494.7	3,116.4	2,181.0
Feb.	3,337.9	3,124.8	2,184.5
Mar.	3,571.6	3,330.9	2,599.5
Apr.	3,462.6	3,166.2	2,579.5
May	3,311.4	3,350.7	2,644.4
June	2,912.1	3,094.5	2,645.1
July	2,767.5	2,737.4	2,180.0
Aug. ....	.....	3,040.7	2,535.6
Sept. ....	.....	2,832.9	2,666.8
Oct. ....	.....	3,442.3	2,897.2
Nov. ....	.....	3,205.7	2,935.7
Dec. ....	.....	2,931.2	2,891.1

Metal Treating Institute.

Charts copyright, 1957, STEEL.



	New Orders 1957	1956	Shipments 1957	1956
Jan.	211	208	206	210
Feb.	181	207	185	211
Mar.	185	224	197	211
Apr.	183	184	193	191
May	167	165	192	171
June	166	154	173	171
July	162	142	141	131
Aug. ....	.....	170	.....	171
Sept. ....	.....	143	.....	161
Oct. ....	.....	213	.....	201
Nov. ....	.....	175	.....	180
Dec. ....	.....	167	.....	161

Avg. 179 ... 180

National Screw Machine Products Assn.

be surprised to see them boost output in late November or December.

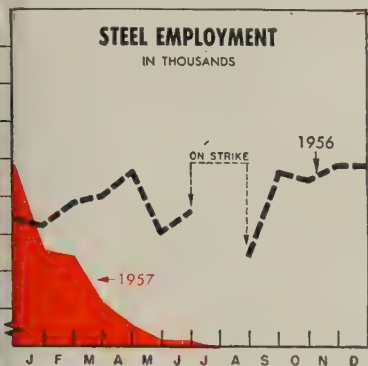
Home Building Comeback—Construction industry analysts are dusting off their rose colored glasses, too. The consensus: The worst is over for home building, and an upturn is starting which will push starts in 1958 up over the 1 million mark. Harold Braman, executive manager of the National Savings & Loan League, believes that the period of tightness in credit for home loans is passed and that the supply of mortgage credit will increase moderately this fall. "Home building will finish the year fairly strong," he says, but adds that it may be at the expense of some other segments of the economy. As other lines of business taper off under the government's anti-inflation program, Mr. Braman believes that some investment funds will switch back into home building. Other observers feel that lower down payments and higher interest rates sanctioned by the government this summer will turn the trick.

Effects on Steel — The home building outlook is adding to the optimism within the appliance industry, and this is being reflected

on the orders placed with steel mills. Continued high operations in heavy construction, electrical and nonelectrical machinery, and metal fabricating, coupled with an upturn in auto and appliance markets, could keep the steel mills busy during the fourth quarter. Peak operations at around 90 per cent of capacity during December would surprise nobody, with the quarter averaging about 86 or 87 per cent. That's all that is needed to give 1957 a record equaling 117 million tons of steel and turn 1957 from an "off" year into a pace setter.

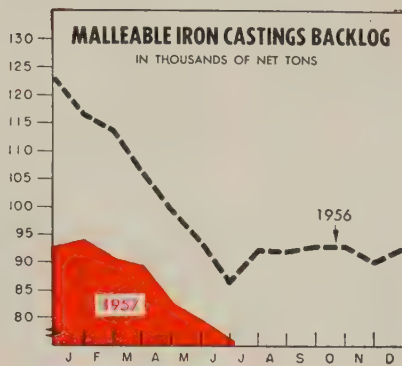
Shipments Improve

According to the Department of Commerce, something of an upturn may have started as long ago as July, when manufacturers' sales rose above the June level on a seasonally adjusted basis. They hit \$29 billion. Only twice before—last January and February—have sales gone above that mark. Durable goods shipments reached a seasonally adjusted \$14.7 billion, the third highest mark in history. New orders for manufactured goods also increased moderately, although the durable goods sector



	Employment in Thousands		Payroll in Millions	
	1957	1956	1957	1956
Jan.	678	681	\$360.4	\$329.1
Feb.	677	684	327.5	317.3
Mar.	671	685	344.2	338.1
Apr.	668	688	331.5	326.7
May	666	680	338.0	333.6
June	666	683	324.8	332.4
July	665	n.a.	334.6	n.a.
Aug.	677	...	300.9	...
Sept.	688	...	339.0	...
Oct.	687	...	358.9	...
Nov.	689	...	346.0	...
Dec.	689	...	347.2	...

n.a.—not available because of strike.
American Iron & Steel Institute.



	Shipments		Unfilled Orders*	
	1957	1956	1957	1956
Jan.	86.0	93.6	93.9	116.5
Feb.	78.0	93.6	90.7	113.6
Mar.	78.0	86.9	89.4	106.5
Apr.	80.3	83.3	83.1	99.6
May	76.5	78.8	79.8	93.7
June	72.6	75.6	76.3	86.2
July ....	...	54.3	...	92.1
Aug. ....	...	74.4	...	91.9
Sept. ....	...	63.4	...	92.6
Oct. ....	...	81.5	...	92.7
Nov. ....	...	82.7	...	90.0
Dec. ....	...	76.4	...	92.3
Total ...	...	950.5	...	...

*For Sale. U. S. Bureau of the Census.

remained unchanged at \$13.2 billion. This resulted in a further decline in unfilled orders to \$59.4 billion for all manufacturing and \$6.3 billion for durable goods industries. Total inventories advanced \$200 million (all of it in durable goods) after holding at \$53.9 billion for two months.

Consumer Credit Jumps

Total consumer credit advanced another \$120 million in July to a record \$42.365 billion, reports the Federal Reserve Board. The gain so far this year has been lower than that of the corresponding period last year. Up to Aug. 1, consumers added \$1.449 billion to their total debt, about 11 per cent under the corresponding figure for last year. Installment gains for the two years are practically equal, but the addition to automotive paper this year is 17 per cent ahead of the pace set in 1956. Repayments amounted to a record \$3.35 billion, seasonally adjusted.

Trends Fore and Aft

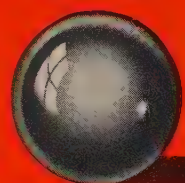
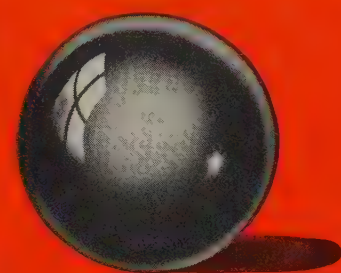
After trailing the year-ago month in May and June, total billings for the heat treating indus-

try in July amounted to \$2,767,500 (see chart, Page 98), a gain of 1.1 per cent over July, 1956, says the Metal Treating Institute, New Rochelle, N. Y.

- For the metal furniture industry, July was one of the best months of 1957, says the National Association of Furniture Manufacturers. Orders were 13 per cent ahead of those in the year-ago month, and July shipments moved 47 per cent ahead of those in the 1956 month. This year trails 1956 by only 8 per cent in orders and 3 per cent in shipments.

- Sales of used machine tools in July declined from 137 per cent of the 1947-49 average to 125.3 per cent, reports the Machinery Dealers National Association. This was in the same month that orders for new machine tools showed a gain of 29.6 per cent.

- New orders of screw machine products in July dipped 4 points to 162 (1947-49=100), less than the seasonal drop of the preceding five years, reports the National Screw Machine Products Association, Cleveland. They were 114 per cent of the 1956 level of business (see chart, Page 98). Shipments also dropped seasonally to 141 per cent of the base period.



COOLIDGE
Balls

**CHROME ALLOY
AND
STAINLESS**

**COOLIDGE CORPORATION
MIDDLETOWN, OHIO**

Ohio Rolls

shaping metal for all industry



OUR

50th
YEAR

1907
1957



Ohio Iron and Steel Rolls:

Carbon Steel Rolls

Ohioley Rolls

Ohioley "K" Rolls

Flintuff Rolls

Double-Pour Rolls

Chilled Iron R

Dense Iron Ro

Nickel Grain

Special Iron R

Nioley Rolls

Forged Steel Rolls

THE OHIO STEEL FOUNDRY CO

LIMA, OHIO

Plants at Lima and Springfield, Ohio



JOHN V. BOARDMAN
Green River Steel v.p.-gen. mgr.



EDMUND SYLVESTER
heads American Ship Building



MADDEN T. WORKS
Dresser Turbodrill operations



EDWARD C. LEIBIG
Corhart Refractories president

essop Steel Co. named John V. Boardman vice president and general manager of its subsidiary, Green River Steel Corp., Owensboro, Ky. J. B. Riley was made secretary-controller. Mr. Boardman was vice president-operations.

Edmund Sylvester succeeds Robert Ackerman, retired, as president of American Ship Building Co., Cleveland. Formerly chairman of the executive committee, Mr. Sylvester is succeeded by Herbert P. Addis who is president of National Screw & Mfg. Co. Mr. Sylvester was president of Griffin Wheel Co. He left that company in 1955 to start a firm in the Union of South Africa to make cast wheels by pressure pouring. He has also worked as a consulting engineer since 1955.

Bernard J. Beierla was appointed chief metallurgist of Springfield Foundry Co., Indian Orchard, Mass. He is in charge of metallurgy and quality control. Mr. Beierla was chief metallurgist with E. W. Bliss Co.

Michael Bender was made metallurgist and welding engineer with Blaw-Knox Co.'s Buflovak Equipment Div., Buffalo.

Paul E. Anders was made chief industrial engineer for Chrysler Div., Chrysler Corp., Detroit.

Kenneth A. Hawkins was named sales manager, central U. S., for E. F. Hauserman Co., Cleveland. He is replaced as Chicago branch manager by James W. Tyrer.

Madden T. Works was made manager of operations, Dresser Turbodrill Div., Dresser Industries Inc., Dallas. He was president of Pioneer Specialties Inc.

Jack H. Smith was made manager of districts, a new post in the sales division of Wolverine Tube Div., Calumet & Hecla Inc., Detroit. He was manager of Wolverine's east central sales district and is replaced by Richard B. Flynn, with headquarters in Detroit.

Daniel F. Darney was made manager, stainless steel products division, U. S. Steel Supply Div., U. S. Steel Corp., Chicago.

John Petrovich was made sales manager and assistant to the general manager at Mohawk Tools Inc., Montpelier, Ohio.

R. B. McCarthy was made chief engineer of Surface Combustion Corp.'s steel mill division, Toledo, Ohio.

L. D. Deal was elected president of Lyon Metal Products Inc., Aurora, Ill., to succeed the late H. B. Spackman. Mr. Deal was secretary and treasurer. A. W. Walan was elected secretary-treasurer; J. B. Gossett, assistant treasurer.

John A. Hawkins was appointed vice president-sales, Bristol Steel & Iron Works Inc., Bristol, Va. He was manager of sales.

William A. Schubert was made engineer in charge of rotary compressor sales, Allis-Chalmers Mfg. Co., Milwaukee.

Edward C. Leibig was elected president, Corhart Refractories Co. Inc., Louisville. He succeeds Hugh L. Kline, appointed field sales manager, television sales department, Corning Glass Works, parent company. Mr. Leibig continues as general manager of the refractories division at Corning.

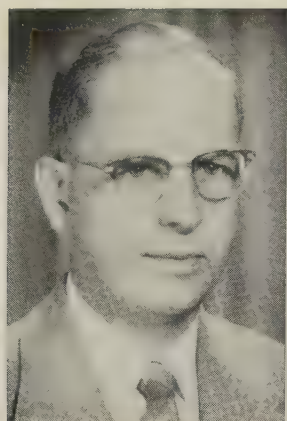
William S. Perkins was made director of purchases for Westinghouse Electric Corp.'s general products group, Pittsburgh. He was purchasing agent at the small motor division, Lima, Ohio.

William R. Harkness was promoted to sales manager, Seaboard Pacific Div., Associated Spring Corp., Gardena, Calif. He was sales supervisor.

Harlan T. Pierpont was made sales manager, electrochemical division, Norton Co., Worcester, Mass. Frederick J. Rutland was made manager of sales engineering for that division. Frank B. Huke was made manager of atomic product sales, refractories division, and George H. Powers was made manager of distribution for that division.

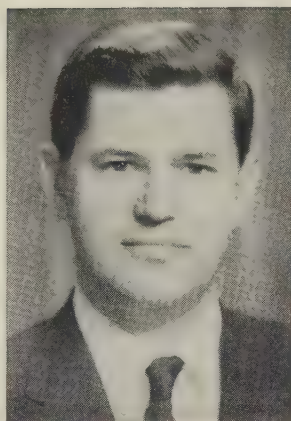
Paul W. Leming was elected executive vice president, Van Norman Machine Co. Div., Van Norman Industries Inc., Springfield, Mass. He was works manager of King Machine Tool Div. and Elmes Engineering Div., American Steel Foundries.

John L. Cotsworth was appointed staff manager-stainless steel for Chase Brass & Copper Co., Water-



PETER J. LUCHINI

Colonial Engineering promotions

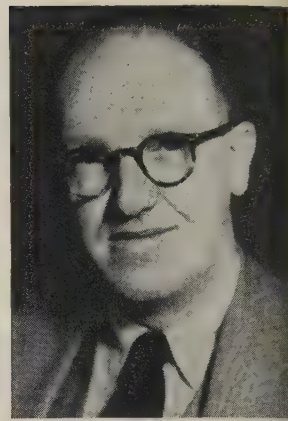


JOHN ENOS



JAMES A. ROEMER

Sharon Steel chairman and president



ALFRED M. TREDWELL JR.

bury, Conn. He was sales manager at Northeastern Steel Corp.

Colonial Engineering Co. Inc., Cambridge, Mass., promoted **Peter J. Luchini** from general manager to vice president-general manager; **John Enos** from plant manager to vice president and production manager.

D. J. Bond, for many years Detroit district manager of Lapointe Machine Tool Co., resigned to become sales representative of the special products division of **Colonial Broach & Machine Co.**, Detroit.

J. William Snyder joined the sales department's technical service staff at **Universal-Cyclops Steel Corp.**, Bridgeville, Pa., as stainless metallurgist. He was assistant superintendent, wide band department, Bridgeville plant.

Paul R. Christiansen was made district sales manager for **Granite City Steel Co.'s** Memphis, Tenn., office. He succeeds **Howard J. Poland**, retired.

W. N. Murray was named manager, Boston branch office, **American Air Filter Co.** He succeeds **Robert E. Reid**, appointed a special sales engineer, working out of the Boston office.

Bernard Campbell was made plant manager, **Calstrip Steel Corp.**, Los Angeles.

Clyde Wilson was made manager, erection division, **Truscon Steel Div.**, Republic Steel Corp., Youngstown. He succeeds **L. F. Michels**, now assistant manager of sales, architectural products.

James A. Roemer was elected chairman; **Alfred M. Tredwell Jr.**, president of **Sharon Steel Corp.**, Sharon, Pa. **Henry A. Roemer** relinquishes his posts as chief executive officer, chairman, and president to continue as chairman of the executive committee. **Mr. Tredwell** was vice president-operations. **James Roemer** will continue as president of **Mallory-Sharon Titanium Corp.**

Harold C. Erskine was made general manager in charge of smelting and fabricating operations at **Aluminum Co. of America**, Pittsburgh. **Raymond T. Whitzel** retired as vice president and general production manager.

Paul V. Malloy was appointed vice president-operations, **Kemet Co. Div.**, Union Carbide Corp., Cleveland.

Leonard H. Seeman was named manager, products sales engineering department, **Greer Hydraulics Inc.**, Jamaica, N. Y.

Dr. Robert B. Costello was made assistant manager, materials department, **Aerophysics Development Corp.**, Santa Barbara, Calif., subsidiary of **Curtiss-Wright Corp.**

Lloyd G. Backart was elected vice president-sales for **Rapistan-Keystone Co. Inc.**, Detroit, effective Oct. 1. He was assistant sales manager for **Rapids-Standard Co.**, affiliate firm.

Robert C. Long was made New York regional manager, **Lamson Corp.**

E. S. Fraser was made assistant

general sales manager at Chicago for **Chicago Bridge & Iron Co.**

Lawrence R. Keenen was made eastern regional engineering manager, systems division, **Beckman Instruments Inc.** He is at the Mountainside, N. J., plant.

Arthur P. Hesse was made Cincinnati district sales manager, **Aluminum Safety Products Inc.**

Ralph Reynolds, formerly technical sales manager of **Acoustica Associates**, Mineola, N. Y., was made general sales manager.

John A. Eckel, assistant to the general superintendent, **Fairless Works**, U. S. Steel Corp., was appointed assistant to the general manager-steel operations at Pittsburgh.

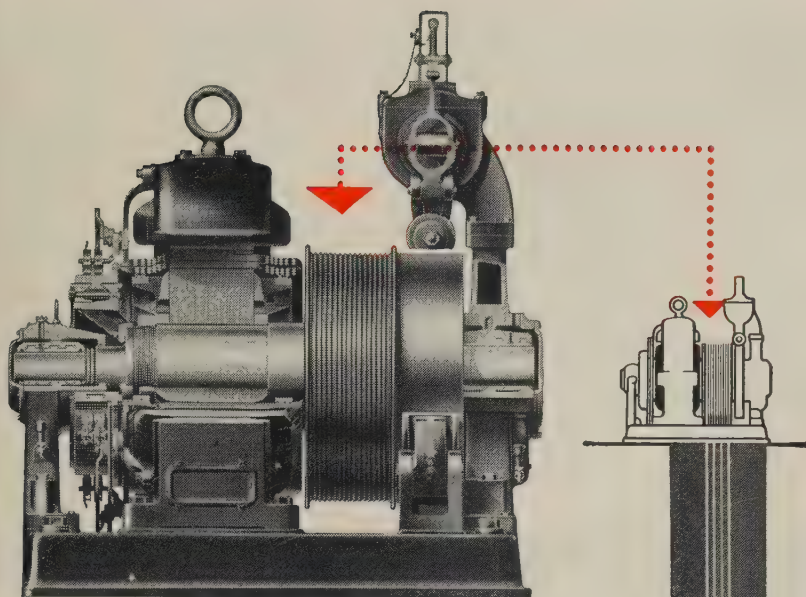
Edgar W. Percy was made assistant sales manager, **Williams Bucket Div.**, McDowell Co. Inc., Cleveland.

N. J. Kassnel was made district manager of the new Cleveland sales office of **Verson Allsteel Press Co.**

E. E. Karlins succeeds the late **E. W. Samuel** as manager of the Oakland, Calif., plant of **Fenestra Inc.**

Maryland Shipbuilding & Drydock Co., Baltimore, appointed **Robert J. Patrick** assistant to the senior vice president; **James A. McQuaid**, assistant to the director of purchases.

I. Ray Darr was named manager, **Industrial Fabricating Co.**, Toledo, Ohio. He was purchasing agent



Otis Elevators Use HANNA PIG IRON to support their ups and downs



Rough finishing a one-piece sheave rim and brake pulley casting in the Otis Elevator Company's Yonkers foundry.

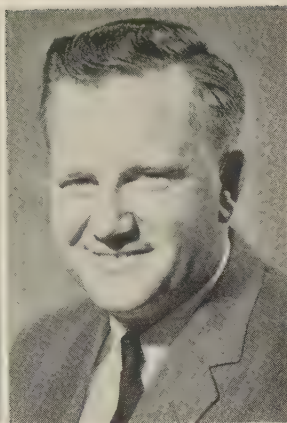
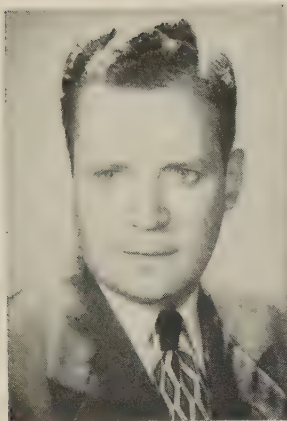
Center of action in the mechanism of Otis Elevator Company's high-speed (up to 1,400 ft. per minute) Autotronic passenger elevators is the one-piece cast iron drum shown in place in the top picture and in rough form below. Half of the drum serves as a sheave rim for the elevator's cables, the other half as a brake pulley. To maintain the high standards of quality and performance demanded of these drums, Otis Elevator's foundry at Yonkers, N. Y., casts them with Hanna Pig Iron.

The Hanna range includes the Hanna 38-pound pig, the foundryman's favorite standard, in all grades, silvery and HannaTite, a specially controlled, close-grain iron. Also available is the HannaTen, a smaller ingot, with finer grain structure and no free carbon pockets. For prompt, expert handling of your pig iron requirements, call your Hanna representative at any time

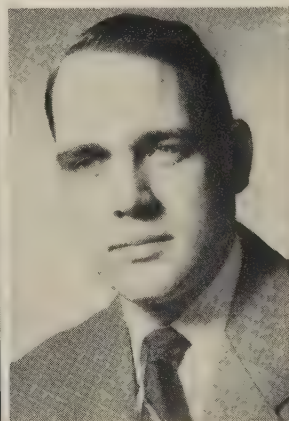
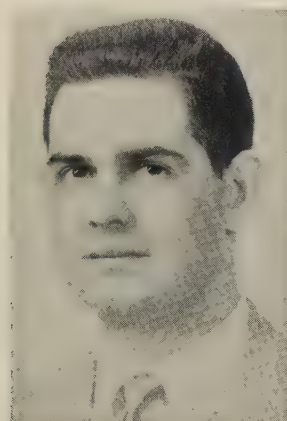
THE HANNA FURNACE CORPORATION

Buffalo • Detroit • New York • Philadelphia
Merchant Pig Iron Division of





JACOB W. COX
AS&W gen. supt.-Duluth Wks. Pittsburgh Steel purchasing post heads Federated Metals Div.



JOHN MONTEAN
Cri-Dan Div. manager

R. J. MILLER
Ford div. chief engineer

EDWARD M. GRADY
Western Brass Mills post

of Toledo Pipe Threading Machine Co.

John Montean was made manager, Cri-Dan Div., Lees-Bradner Co., Cleveland. He was assistant manager.

R. J. Miller was made chief engineer, tractor and implement division, Ford Motor Co., Birmingham, Mich. In his new post, he is responsible for all engineering operations of the division and will be in charge of the company's farm machinery research and engineering center in Birmingham.

James T. Wilson was made a special representative of Nordberg Mfg. Co.'s subcontracting and new products department. He is in Washington.

W. R. Beall was named sales manager for the electronics division, Clary Corp., San Gabriel, Calif.

David J. Belock was named manager of Clark Controller Co.'s newly opened San Francisco office.

Edward M. Grady was named sales manager of mill products, Western Brass Mills Div., Olin Mathieson Chemical Corp. He is at East Alton, Ill.

Jay E. Watson was made chief engineer-conventional gages of Pratt & Whitney Co.'s gage division, West Hartford, Conn. Mr. Watson was chief of the Ordnance Gage Center at Frankford Arsenal.

O. H. Mackley was appointed vice president and general manager of Hycon Electronics Inc., Pasadena, Calif., subsidiary of Hycon Mfg. Co.

Albert H. Clarke, vice president-engineering, Crouse - Hinds Co., Syracuse, N. Y., was named vice president-manufacturing. Russell P. Northrup becomes vice president-engineering.

Malcolm B. McTernan, account executive for Luria Bros. & Co. Inc., transfers to the Ohio area office in Cleveland. He was in the New Jersey and eastern Pennsylvania areas.

Jacob W. Cox was made general superintendent of the Duluth Works, American Steel & Wire Div., U. S. Steel Corp. He succeeds C. A. Purbaugh who was named assistant manager of operations for the Duluth district. Mr. Cox was director of raw materials in the office of the vice president in Cleveland.

J. J. Balint was promoted from senior clerk to buyer in the purchasing department of Pittsburgh Steel Co., Pittsburgh.

R. D. Bradford, vice president, American Smelting & Refining Co., New York, was placed in charge of the company's Federated Metals Div.

OBITUARIES...

F. R. McFarland Sr., 62, Houston works manager, Sheffield Div., Armco Steel Corp., died Aug. 30.

Earl H. Goodby, 66, vice president and treasurer, Sanson & Rowland Inc., Philadelphia, died Sept. 6.

S. S. Hibbard, 57, chief engineer, Dobbie Foundry & Machine Co., Niagara Falls, N. Y., died Sept. 1.

Mathew G. Sternberg, 68, consultant to Blaw-Knox Co., East Chicago, Ind., foundry, died Sept. 4. He was president of Continental Foundry & Machine Co. until that company was purchased in 1955 by Blaw-Knox.

John H. Drennen, 49, chief hydraulics engineer, Commercial Shearing & Stamping Co., Youngstown, died Sept. 5.

Robert S. Rose, Boston district manager, Latrobe Steel Co., died Aug. 26.

Edgar L. Longaker, 75, for many years manager of design engineering for Exide Industrial Div., Electric Storage Battery Co., died Aug. 29 in Norristown, Pa.

Otis Hutchins, 68, former director of research for Carborundum Co., Niagara Falls, N. Y., died Aug. 27.

Ray DeKalb, vice president, Apex Hard Chrome Co., Cleveland, died Sept. 1.

jets Navy Contracts

Westinghouse will build radar and armament systems at airport plant in Baltimore

CONTRACTS to produce \$19 million worth of shipboard and aerial electronic equipment for the Navy have been awarded to Westinghouse Electric Corp.

The projects cover defense systems for the Navy Bureau of Aeronautics and air-search radar sets for the Bureau of Ships. They will be produced at the company's Friendship Airport plant, Baltimore. The contracts represent continuations of programs, says B. M. Brown, vice president in charge of Baltimore divisions.

The defense system involves a \$10 million production schedule that will continue into 1959. This equipment directs the unmanned tail turret of bombers by detecting enemy aircraft and automatically aiming and firing tail guns. It will be used in the Navy's carrier-based F3D.

Air-search shipboard radar equipment will be installed aboard Navy ships after mid-1958.

Timken To Buy Furnace

Timken Roller Bearing Co., Canton, Ohio, will install a consumable electrode, vacuum electric furnace with a capacity of about 200 tons a month. It can produce 24 in. ingots. Directors of the company have appropriated \$500,000 for the project. Steel for higher stressed bearing applications (for vital aircraft parts and use in the guided missile program), will be produced.

Harley-Davidson To Move

Harley-Davidson Motor Co., Milwaukee, will close its plant in that city and move all operations to its plant in Butler, Wis. It has a floor area of about 275,000 sq ft.

Electromet Forms Division

New metallurgical products with unique properties will be offered through a new Fine Metals &

Chemicals Div., established by Electro Metallurgical Co., a division of Union Carbide Corp., New York. Appointments to the division at Niagara Falls, N. Y., include: C. M. Brown, manager; T. R. Evans, metallurgical engineer in charge of sales; and L. A. Stoyell, metallurgical engineer in charge of manufacturing.

Awards Reactor Contract

Argonne National Laboratory, Lemont, Ill., awarded a contract to United Engineers & Constructors Inc., Philadelphia, for the design of a boiling water reactor facility. It's for the laboratory's Idaho Div. site. The facility will cost \$8.5 million.

Scott Equipment Expanding

Scott Equipment Co., Dayton, Ohio, is constructing a \$160,000 building at 272 Leo St., that city. Containing about 8000 sq ft of floor space, it will be completed about Dec. 15.

Enters Drop Forging Field

Federal Steel Corp. has been organized, with executive offices in Ellwood City, Pa., and manufacturing facilities in Beaver County, Pennsylvania. The firm's principal product is drop forgings. Officers are: Chairman and president,

J. G. Cartwright; executive vice president and treasurer, Boyd E. Zeigler; vice president and secretary, Paul J. Cartwright Jr.

Radio Control for Plants

A complete line of radio control equipment for industrial applications will be marketed by CG Electronics Corp., a subsidiary of Gulton Industries Inc., Metuchen, N. J.

The transistorized receivers are available in single or multichannel equipment with operating ranges up to 50 miles.

To Produce Crash Trucks

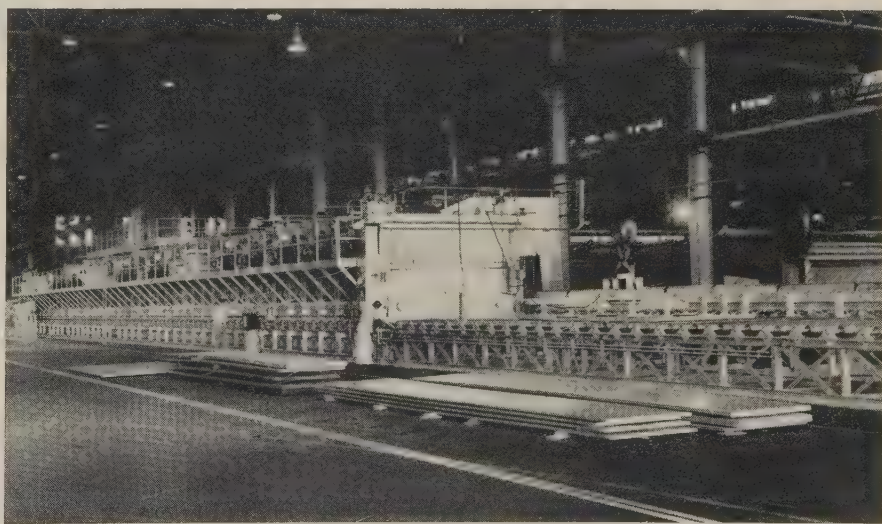
Walter Motor Truck Co.'s plant at Voorheesville, N. Y., will begin operation soon. The firm, employing about 200, will make airport crash trucks under an Air Force contract.

Metals Firm Renamed

Groma Trading Corp., New York, has changed its name to Groma Metal Corp. It is a supplier and technical consultant on the rarer and complex metals, alloys, scrap, and residues.

Opens Missile Division

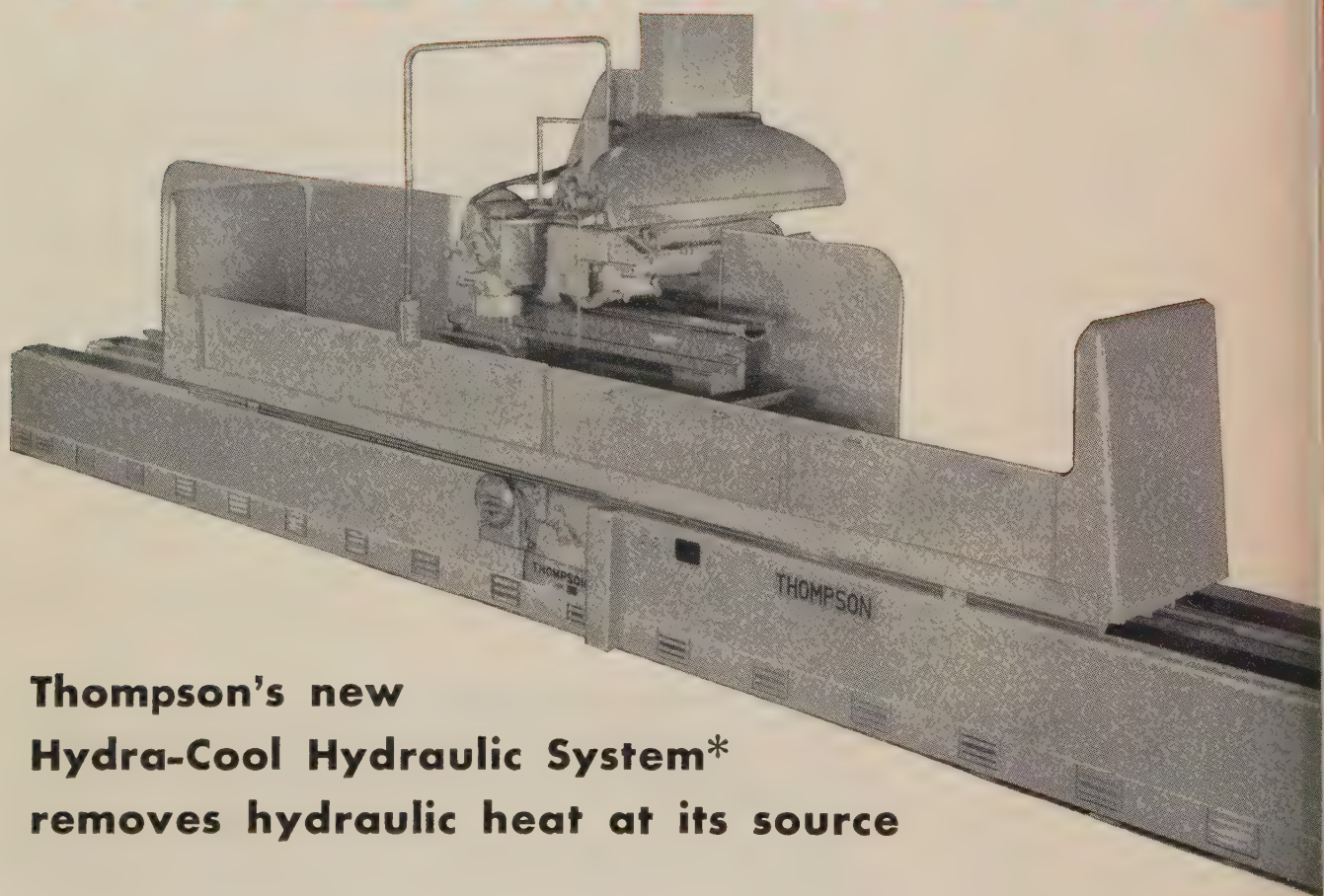
Packard-Bell Electronics Corp., has established a missile equipment section in a 21,000 sq ft plant



Kaiser Installs 400-Ft Heat Treat Furnace

This \$500,000 continuous furnace for large aluminum alloy plates was put into service recently at Kaiser Aluminum & Chemical Corp.'s plant, Trentwood, Wash. Plates up to 5 in. thick, 110 in. wide, and 50 ft long can be processed in the electric furnace. Heat treatment imparts high strength to metal for aircraft and other structural uses

HYDRA-COOL



Thompson's new Hydra-Cool Hydraulic System* removes hydraulic heat at its source

The new Thompsons grind cool—and stay cool—no matter how long the run! ONLY in this new hydraulic system can you get these important, exclusive advantages—

- Hydra-Cool eliminates heat damage to the hydraulic seals, valves, controls and pump.
- Hydra-Cool will not break down the additive-type hydraulic oils—sludge will not form in the Hydra-Cool System.
- Hydra-Cool eliminates the usual lengthy warm-up period required to bring production surface grinders up to working temperature.
- Hydra-Cool saves you money on power costs.

Hydra-Cool is standard on all Thompson surface grinders 40 inches and up in work length AT NO EXTRA COST.

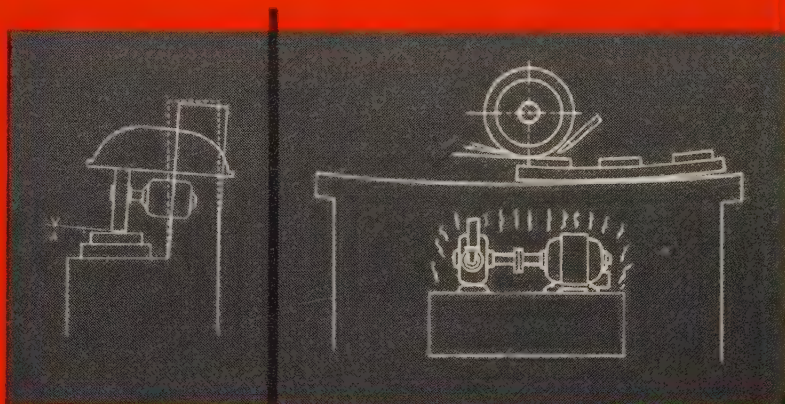
* Pat. Applied For

"KEEP *Thompson* **IN MIND FOR THAT DAILY GRIND"**

Constant **ASSURES ACCURACY**

HEAT DISTORTION IS ELIMINATED IN THOMPSON SURFACE GRINDERS

As shown at right, heat distorts the column of a surface grinder from its true vertical alignment, causing the column to bend back from the work table. This further destroys the machine's accuracy.



HOW HEAT DISTORTS A SURFACE GRINDER

Coolant, splashing and evaporating on the work table, cools the top surface, which contracts. Hydraulic heat, ranging from 50° to 70° above ambient temperatures, heats the bottom surface of the table, which expands. This causes the whole table to become concave. As shown in the exaggerated drawing above, any work being ground during this distortion is ground too heavily on the ends of the table and not enough in the middle. Surface flatness and parallelism cannot be maintained.

No more than a few degrees rise above ambient temperature is found in the Hydra-Cool System! Distortion is eliminated—accuracy is assured.

SEND FOR DESCRIPTIVE HYDRA-COOL FOLDER

The Thompson Grinder Co.
14 Zeischler Street
Springfield, Ohio, U. S. A.



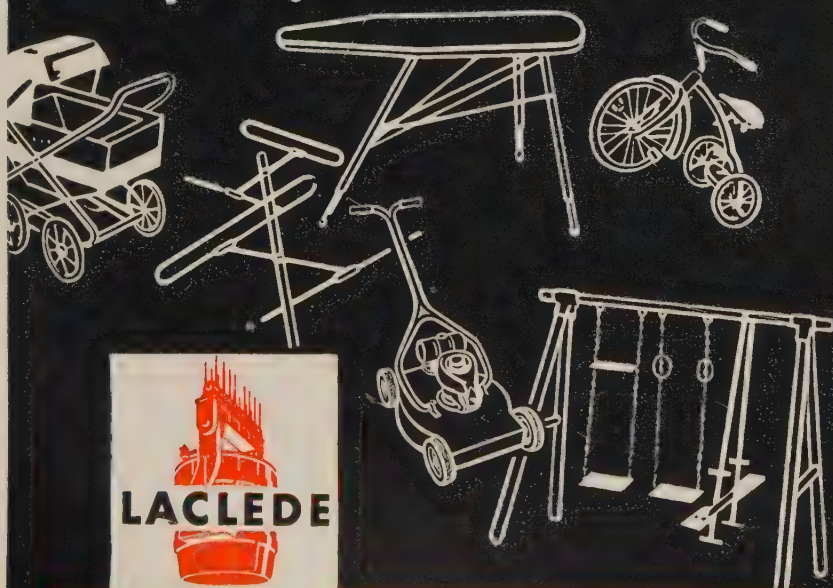
from **LACLEDE**

electric • gas • furnace weld

STEEL TUBING



products
of quality
for
modern America



LACLEDE STEEL COMPANY

Saint Louis, Missouri

at Santa Monica, Calif. It will continue to work on the design, development, and manufacture of ground test and launching equipment for the Douglas Thor IR missile.

New Rolling Mill

Techalloy Co. Inc., Rahns, Pa., has awarded a purchase contract to H. J. Ruesch Machine Co., Newark, N. J., for a Model 210, 4 high rolling mill. It will provide precision rolled strip in Monel, Inconel, Inconel "X," nickel, stainless, and heat resisting steels.

Improves Facilities

Straight line production for electric ranges is being installed in Greenville, Mich., by Gibson Refrigerator Co., a division of Hupp Corp. When the transfer of operations is completed, refrigerator range, and freezer operations will be centered in Greenville.

New Name

Clingan & Fortier Inc., San Francisco, subsidiary of Reynolds Metals Co., has changed its name to Reynolds Aluminum Supply Co. The firm has 11 warehouses in the Far West.

Land Purchased

A 40-acre industrial site in Sharon, Pa., has been acquired by Shenango Metal Craft Co. It plans to expand operations as an engraver of stainless steel plates and plot the land for light industrial sites.

Buys Land

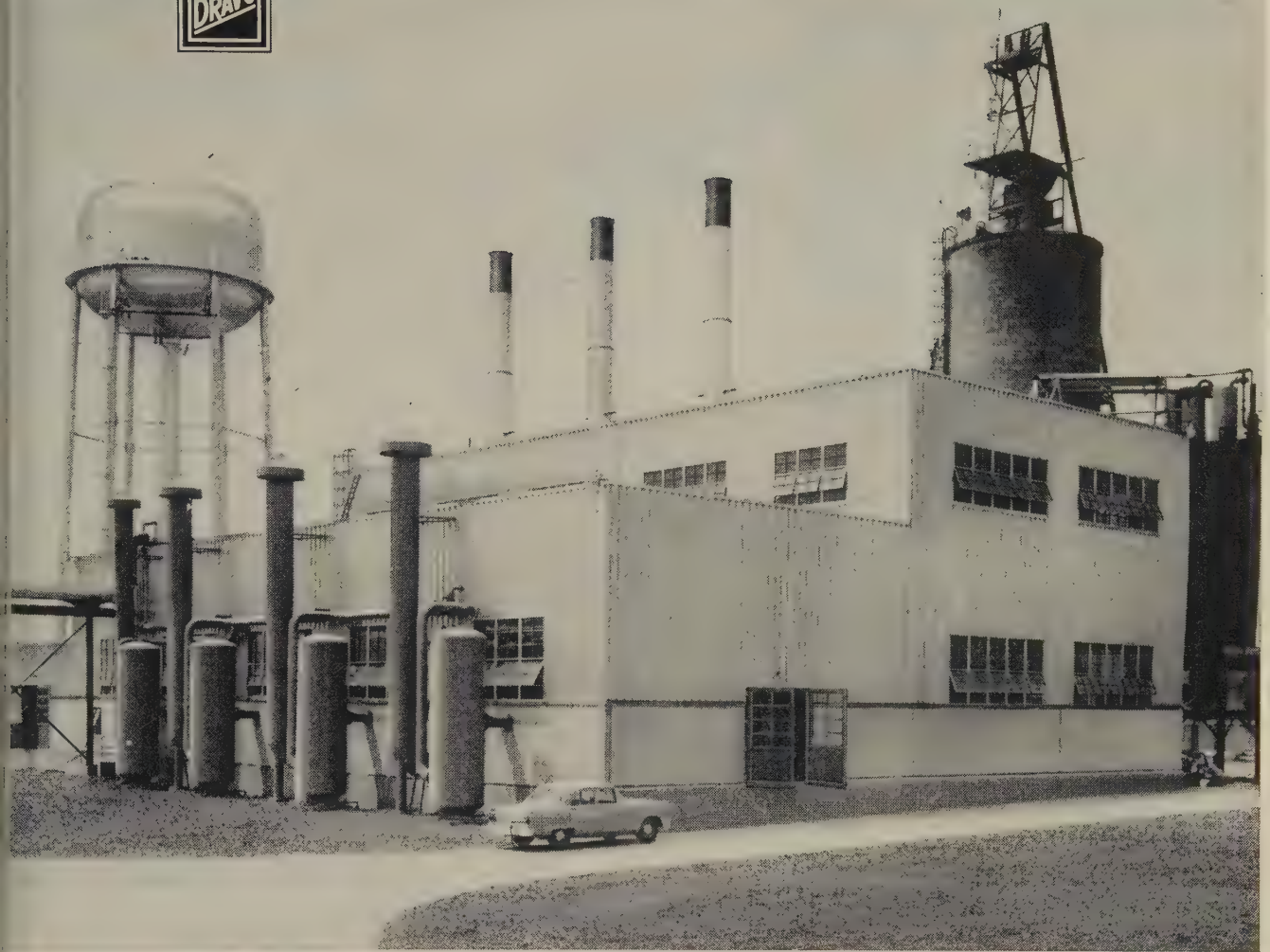
Electronic Engineering Co. of California purchased 530,000 sq ft of land in Santa Ana, Calif., for expansion.

San Diego Firm Expands

Gretch Machine Tool Co., San Diego, Calif., added a 10,000 sq-ft building to its facilities. It is expected to increase production capacity by 80 per cent.

MacDermid Pacific Formed

MacDermid Inc., Waterbury, Conn., and Detroit, manufacturer



Five "turn-key" boiler plants for FORD

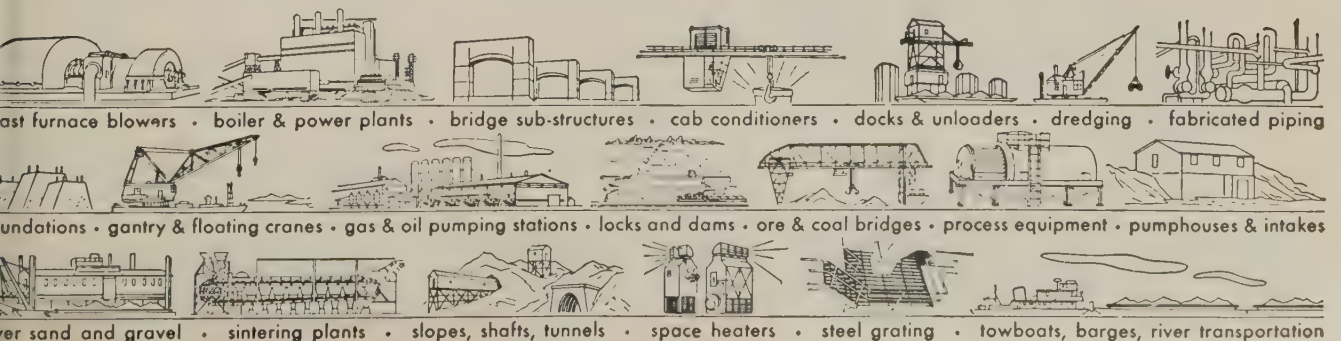
Five new Ford Motor Company factories will have Dravo-built steam generating and air compressor plants similar to this one in Sterling Township near Detroit. Three are in operation, the fourth and fifth are under way. First of these turn-key projects was built in 1955. Ford engineers specified design requirements . . . Dravo handled engineering-construction, procured equipment and erected the complete plant.

Dravo has built more than 80

power and steam generating plants for both industrial and central station use. The combination of pipe fabrication facilities and construction experience produces low cost plants that are economical to operate and maintain.

Your next construction project may benefit by making use of this teamwork. For information on this, or any of the products and services listed below, write DRAVO CORPORATION, PITTSBURGH 25, PENNSYLVANIA.

DRAVO
CORPORATION



blast furnace blowers • boiler & power plants • bridge sub-structures • cab conditioners • docks & unloaders • dredging • fabricated piping

foundations • gantry & floating cranes • gas & oil pumping stations • locks and dams • ore & coal bridges • process equipment • pumphouses & intakes

over sand and gravel • sintering plants • slopes, shafts, tunnels • space heaters • steel grating • towboats, barges, river transportation

GRIPHOIST TIRFOR Saves Man-hours for You in Plant Installation and Maintenance

One man using

GRIPHOIST TIRFOR

often Does the job of
a crew of 4 to 6 men

- Factory — one man using GRIPHOIST placed 3 sections of 40,000 lb. machine in minutes
- Maintenance — overhead lift jobs handled when power machinery unavailable
- Rigger — 2 men moved 40-ton load from truck to foundation — in lieu of costly set-up
- Construction — 6 GRIPHOISTS saved 1000 man-hours removing false-work on 12-span overpass
- Vans — Trucks — GRIPHOIST loads and unloads girders, angles and plates

Manually operated, GRIPHOIST weighs 42 lbs; rated for 3300 lbs. single line to 6 tons 4-part line; unlimited travel 1/2" cable.



One man using a GRIPHOIST places heavy tank in 5 minutes

Ask your dealer or write

Princeton Griphoist, Inc. 32 GEORGE STREET • BOSTON 19, MASS.

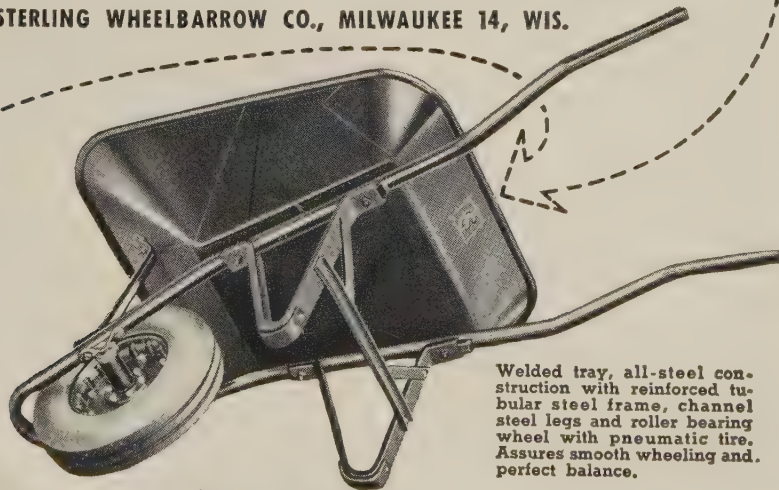
Griphoist, Inc. 424 BRYANT STREET • SAN FRANCISCO 7, CALIF.



STANDS FOR *Sterling*
AND *Satisfaction!*

The "S" stamped on the back of every Sterling Wheelbarrow symbolizes Sterling quality and satisfaction in barrow transportation. It is our way of letting you know that Sterlings are built from the finest materials by skilled craftsmen.

STERLING WHEELBARROW CO., MILWAUKEE 14, WIS.



Welded tray, all-steel construction with reinforced tubular steel frame, channel steel legs and roller bearing wheel with pneumatic tire. Assures smooth wheeling and perfect balance.

Sterling WHEELBARROWS

of metal cleaning, plating, and finishing chemicals, opened a new division, MacDermid Pacific Inc., 18802 Fonthill, Torrance, Calif. It is operating manufacturing, warehousing, sales, and service facilities under the direction of C. E. Weekly.

Enters Ultrasonic Field

P. M. Platzman has formed a new company in the ultrasonic industry with headquarters in Mineola, N. Y. The organization will make ultrasonic cleaning machines and metalworking equipment.

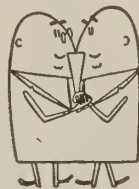
Gulton Gets Tool Rights

Gulton Industries Inc., Metuchen, N. J., has been licensed for the production of a Laminage under patent rights held by General Motors Corp., Detroit. This production tool is used to check platings and coatings on metals and other electrically conductive materials. It measures to extremely fine tolerances and can detect pinholes and flaws in production line items not readily seen by inspectors.

Research on Foil

Fundamental research for the foil and packaging industries will be carried on in the Foil and Packaging Div. of Alcoa Research Laboratories, New Kensington, Pa.

The laboratory is at work on a number of foil ideas for construction, electrical, home decorating, food processing, printing, packaging, and pharmaceutical use.



CONSOLIDATIONS

Directors of Ray-O-Vac Co., Madison, Wis., and Electric Storage Battery Co., Philadelphia, have "agreed in principle" on merger terms. Ray-O-Vac produces dry cell batteries, and the Philadelphia firm makes industrial and automotive storage batteries under the "Exide" name.

Stockholders of Dobeckmun Co., Cleveland, manufacturer of flexible packaging, gift wraps, and me-

allic yarns, approved the firm's merger with Dow Chemical Co.



REPRESENTATIVES

Tri - State Engineering Co., Washington, Pa., announced that argotainers and other material handling equipment formerly sold through the Pittsburgh Steel Products Div. of Pittsburgh Steel Co. will be sold through Tri-State.

Morristown Electrical Supply Co., Morristown, N. J., are the distributors of Asco solenoid valves produced by **Automatic Switch Co.,** Morham Park, N. J.

Torrington Co., Torrington, Conn., has appointed South East Machinery Co., Ft. Lauderdale, Fla., as the Florida representative for its swaging machines.

Heiland Div. of Minneapolis-Moneywell Regulator Co., Denver, announced that the sales and servicing of Heiland gas indicators will be handled by **Johnson-Williams Inc.,** Palo Alto, Calif.



NEW OFFICES

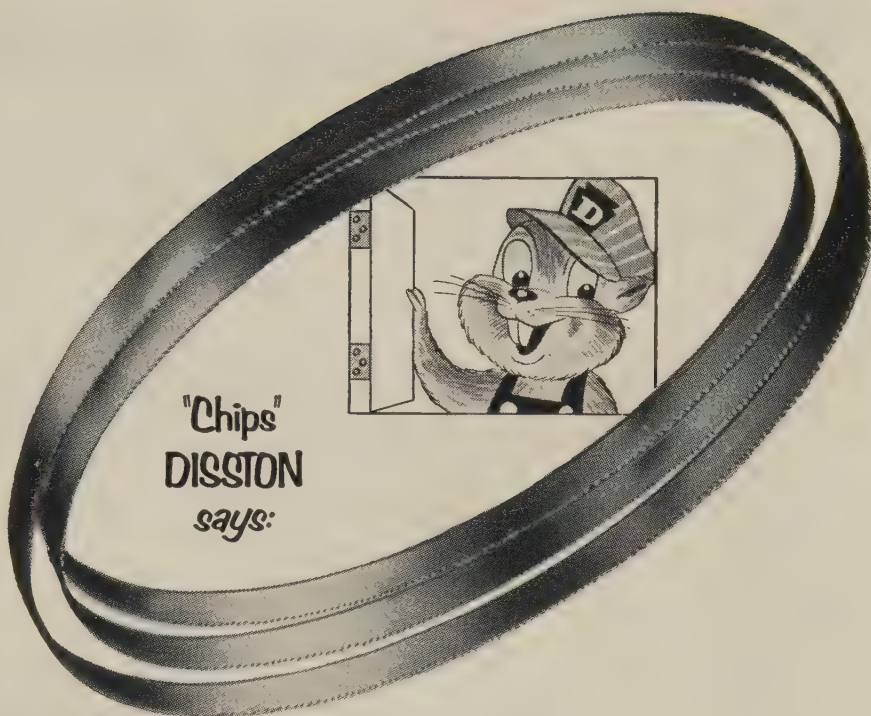
A sales office in Jacksonville, Fla., has been opened by the "**Automatic**" Sprinkler Corp. of America. Address: Ames Bldg., 2721 Park St.



NEW PLANTS

Gibson Electric Co., Delmont, Pa., a producer of electrical contacts, has moved its manufacturing facilities and offices from Pittsburgh to a new plant in Delmont. All manufacturing, research, purchasing, marketing, sales, and office facilities are housed in the new building.

A new distribution center for the New England area is being built by **Becco Chemical Div. of Food Machinery & Chemical Corp.,** Buffalo. The 6000 sq-ft facility will be in Framingham, Mass.



"Chips"
DISSTON
says:

"for long, long blade life—
choose a **DISSTON!**"

Does your work call for close tolerance cutting . . . fine edge-holding qualities . . . good finish? Disston Metal Cutting Band Saws give you all that and more—*long, long blade life!*

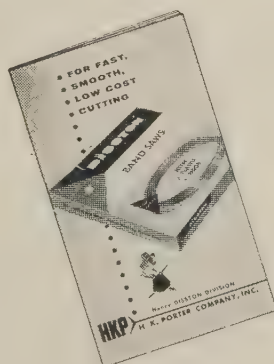
LANCER TOOTH—Hard edge blade with positive rake angle tooth. Permits high-speed production cutting of non-ferrous metal, wood and plastic. Cuts brass and aluminum solids and Plexiglas with equal ease.

REGULAR TOOTH—Hard edge flexible back band saw with finer tooth spacing. Cuts all ferrous metals and thinner sections of non-ferrous metal and plastic. Excellent for sawing angle iron, steel tubing, nickel plate and brass sheets.

Your Disston distributor is the man to see if production is too low and costs too high. He can help you boost one and lower the other.

NEW BOOKLET—YOURS FREE!

To obtain YOUR FREE COPY of Disston's colorful, information-packed booklet on Metal Cutting Band Saws, write today to Dept. 26. Henry Disston Division, H. K. Porter Company, Inc., Philadelphia 35, Pa.



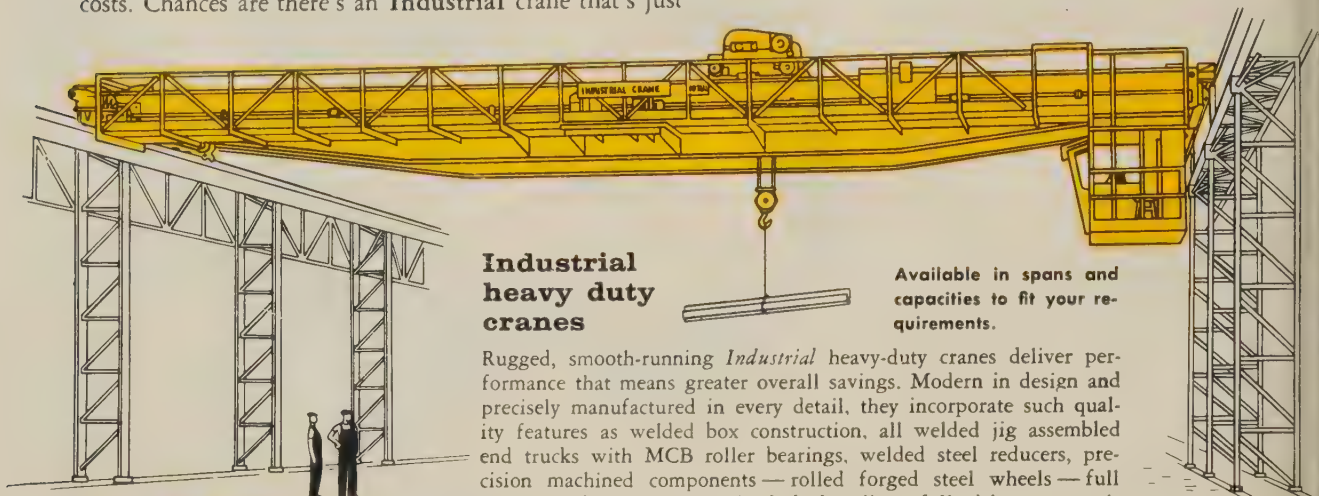
H. K. PORTER COMPANY, INC.

Henry DISSTON DIVISION

Industrial Cranes...

Industrial Cranes are skillfully engineered and carefully built to give you years of smooth-as-silk performance with a minimum of maintenance . . . performance that pays real dividends in reduced materials handling costs. Chances are there's an **Industrial** crane that's just

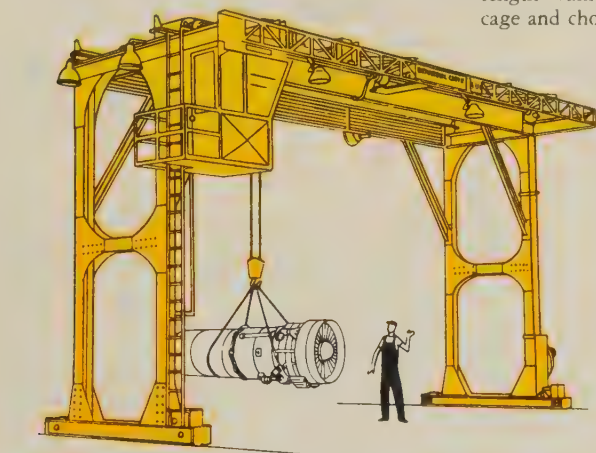
right to solve your particular handling problem. Make your choice from the versatile **Industrial** line . . . our engineers will recommend the **Industrial** crane that's best for you in the long run.



Industrial heavy duty cranes

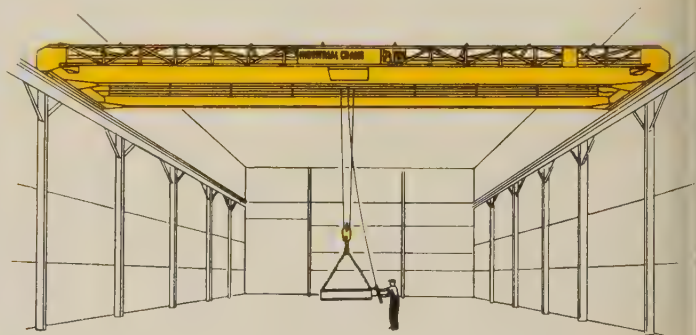
Available in spans and capacities to fit your requirements.

Rugged, smooth-running *Industrial* heavy-duty cranes deliver performance that means greater overall savings. Modern in design and precisely manufactured in every detail, they incorporate such quality features as welded box construction, all welded jig assembled end trucks with MCB roller bearings, welded steel reducers, precision machined components—rolled forged steel wheels—full length walkways, completely decked trolleys, full vision operator's cage and choice of electrical controls and motors.



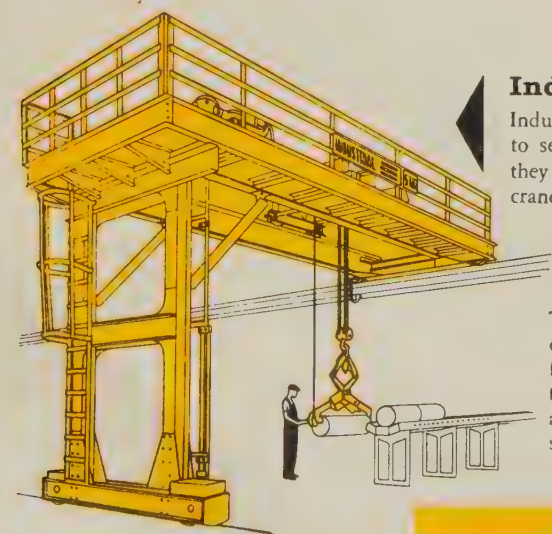
Industrial full gantrys

Available in many spans and capacities to fit practically any need and cycle of operation. They are ideal where travel is long and fixed overhead runways are not desirable.



Industrial top-running double girder, motor driven cranes with outriggers

Capacities to 15 tons. Available in spans to 60 feet. Where service requirements are not heavy duty, these economical cranes built of standard wide flange beams are outstanding for service and reliability. Cab or floor controlled.

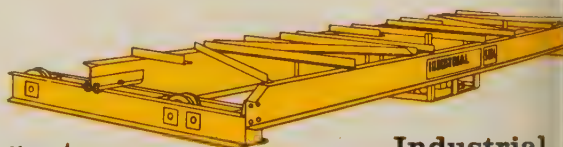


Industrial semi-gantrys

Industrial semi-gantrys often are used to serve local areas in a plant where they operate below the heavy overhead cranes freeing them for other work.

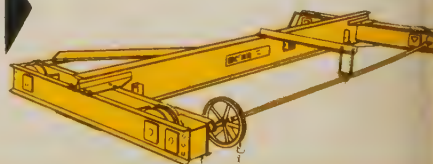
Industrial hand-gear cranes

Top-running crane (illustrated) capacities to 20 tons, spans to 60 feet. Underhung crane capacities to 10 tons, spans to 50 feet. Also available in double girder construction.



Industrial top-running single girder, motor driven crane with outriggers

Capacities up to 15 tons in spans to 50 feet. Ideal for many installations where service requirements are conservative.



Your best investment for the long run...

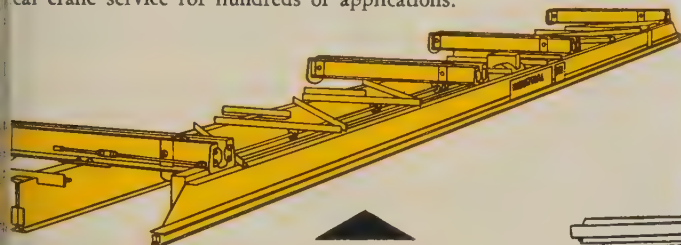


Industrial motor driven MDL cranes

For motorized crane operation when service requirements are moderate.

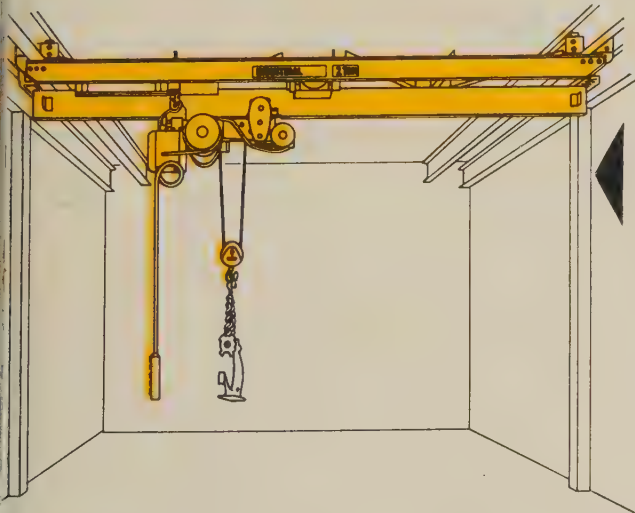
Industrial push-type cranes

Top-running crane capacities to 4 tons, spans to 30 feet. Underhung crane (illustrated) capacities to 2½ tons, spans to 28 feet. Economical crane service for hundreds of applications.



Industrial underhung motor driven multiple runway cranes

Suitable for extremely wide bays. Also available in double girder type.



Industrial underhung double girder motor driven cranes

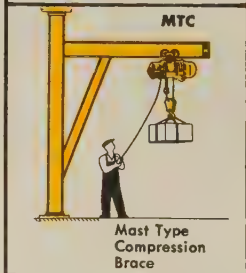
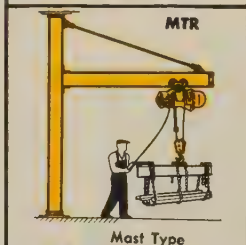
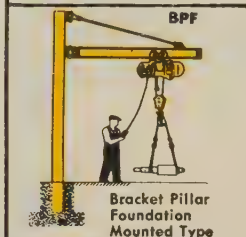
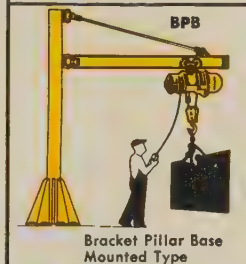
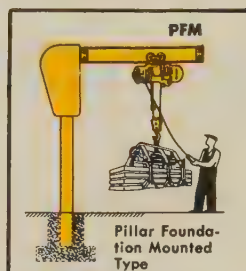
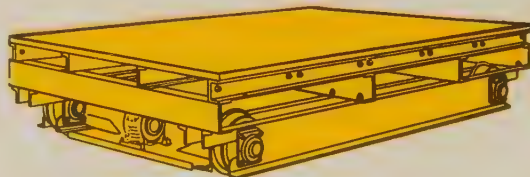
Available in capacities to 15 tons and spans to 50 feet. These smooth operating, rugged cranes are ideal where building structure will support the weight.

Industrial underhung motor driven single girder cranes

Using monorail hoists, these models are available in capacities up to 15 tons. Rugged and dependable.

Industrial transfer cars

Designed for rugged service, with air or electric power. Available in a wide choice of capacities and designs.



Industrial
CRANES



Consult with Industrial Crane & Hoist for practical answers to your materials handling problems. Send for catalogs.

INDUSTRIAL CRANE & HOIST

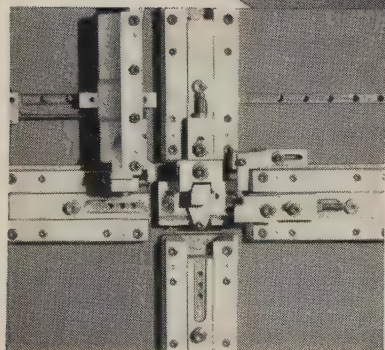
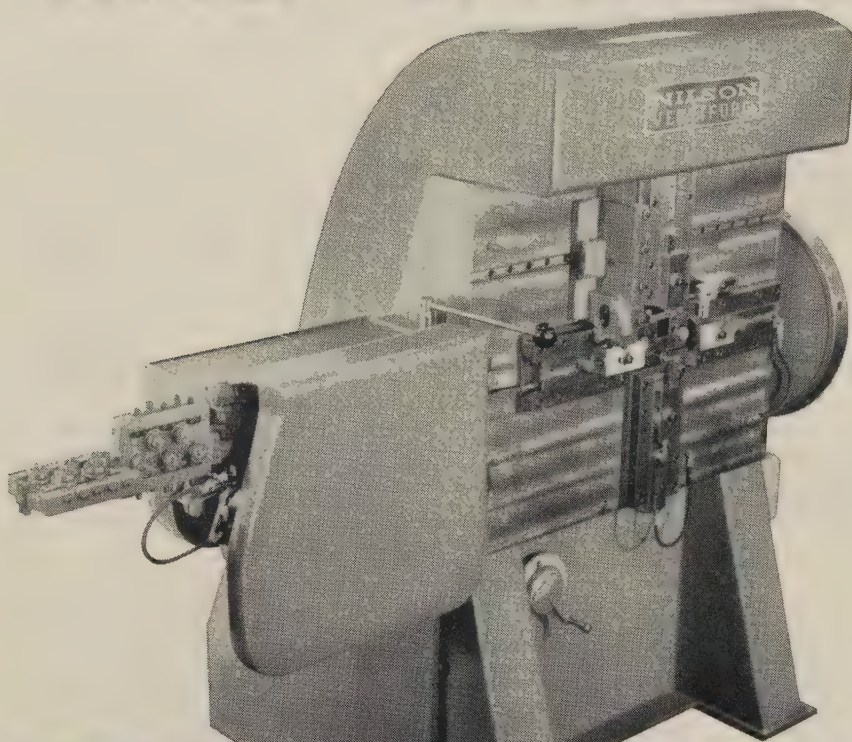
INGERSOLL PRODUCTS DIV. BORG-WARNER CORP.

1550 S. PAULINA STREET, CHICAGO 8, ILLINOIS

Export Sales: Borg-Warner International, 36 South Wabash Ave., Chicago 3, Illinois

NEWEST

CONCEPT IN FORMING



NILSON VERTIFORM

Our LATEST DEVELOPMENT—
Applying 4-Slide Forming Techniques To A Vertical Machine.

Designed For Rapid Tooling
Set-Up And Ease Of Operation.

MACHINE SPECIFICATIONS

#V-187

- Max. diam. wire—_inches187
- Max. length of feed—standard 15"
- Max. length of feed—with
change gears 30"
- Max. width ribbon metal 1 1/4"
- Stroke of forming slides 2 1/2"
- HP. required 2
- Machine speed—standard 30-120 RPM
- 4 and 20 ton Press Attachments
available.

ADVANTAGES OF THE NILSON VERTIFORM

1. Greater Tool Accessibility
2. Unobstructed View Of Product Being
Formed
3. Forming Slide Units Removable and
Interchangeable
4. Less Floor Space Required
5. Operator Safety (Most Moving Parts
Enclosed)
6. Automatic Oiling Of Entire Machine

Write To Our New Plant For VERTIFORM CATALOG

THE A. H. NILSON MACHINE CO. 1512 Bridgeport Ave., Shelton, Conn.



Get Set for Metalworking's
Fabulous Future . . .

Make or Buy?

Should the prime producer make his components or buy them from sub-contractors? Is it better to be a prime producer or a supplier?

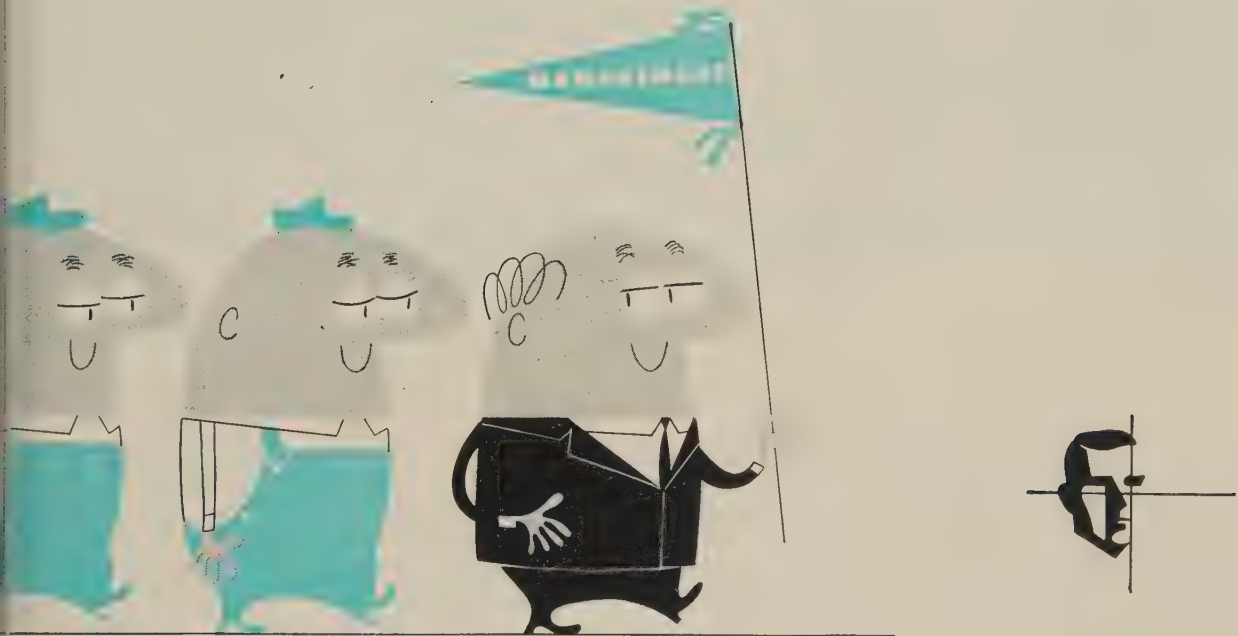
Long a dilemma, those questions are becoming even more crucial as industry makes plans to get set for metalworking's fabulous future.

To help you get set, read STEEL's ninth article in its 1957 Program for Management (coming Oct. 14). It will discuss factors that will influence the decision to make or buy, including cost, capacity, equipment, and technical knowhow.

Articles published to date:

1. **The Care and Feeding of the Junior Executive**
(Feb. 11, Page 93)
2. **Grooming Middle Managers**
(Mar. 18, Page 93)
3. **Profit Sharing**
(Apr. 15, Page 115)
4. **Inventory Management**
(May 13, Page 109)
5. **Managing Our Markets**
(June 17, Page 93)
6. **Research: Threshold to the Future**
(July 15, Page 93)
7. **Producing for the New Technology**
(Aug. 12, Page 113)
8. **Dealing with Workers**
(Sept. 16, Page 119)

Extra personal copies of these Program for Management articles are available until the supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.



Dealing with Workers

AGGRESSIVE metalworking companies are getting more work from men and machines by abandoning the traditional group approach to industrial relations.

They feel a "personalized" program recognizes that the man entering the work force today is different from his predecessors in several respects:

1. He's better educated, has a higher standard of living, works fewer hours, has more leisure, wants more pay, wants (and needs) better supervision.
2. He's stepping into a rapidly changing technology that demands more skill, greater knowledge of his equipment and its role in the

process, and the acceptance of more responsibility.

Two tall hurdles stand in the way:

1. The skilled labor shortage is here to stay for at least another eight years. Census figures indicate the workforce is growing only half as fast as the over-all population.

2. Management has surrendered many of its prerogatives of leadership to labor unions. They must be recaptured. (Take a look at your contract and compare its provisions with the checklist on Page 122.)

Industrial relations experts agree: You can get over both ob-

stacles by doing the most with what you have. They advise:

1. Put more emphasis on training employees for the new jobs ahead.
2. Design your communications to reach the individual.
3. Learn how to motivate the individual to identify his interest with that of the company.
4. Get a labor contract that permits you to deal with the individual more effectively.

Wring Out Contract Costs

"Most managements," says E. F. Scoutten, vice president-personnel for Maytag Co., "are acutely

The employee's standard

He's better educated . . .

Educational Levels

(% of population, 25 and over)

	Grade School	High School	College
1952	18.8	24.1	6.1
1950	20.2	20.2	6.0
1940	27.8	14.1	4.6

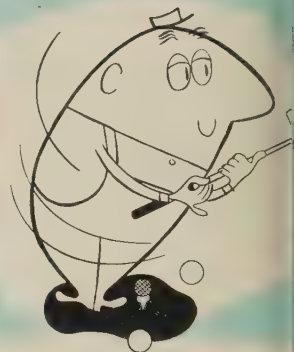


Works fewer hours . . .

Average Workweek

1965*	37 hr
Today	40 hr
1930s	44-45 hr
1920s	48-50 hr

*Estimated by STEEL.



aware of operating costs represented by direct wages and so-called fringe benefits. But how many can give realistic figures on the cost of labor turnover—hiring and recruiting, training, terminating, transferring, layoffs, and recalls?

"One company made a study of these costs and came up with these: Recruiting one worker, \$5.48. Hiring him, \$13.23. Orienting him, \$1.56. Training, \$238.40. Replacing tools damaged or destroyed, \$41.19. Transferring from one classification to another, \$94.14. Terminating, \$3.77. Laying off, \$1.21. Recalling, \$1.30. Miscellaneous, \$100. So, turnover costs come to over \$500 per man. Multiply that by your turnover, and you'll have a rough estimate of what it's costing you."

Many of those factors are affected by your contract provisions on seniority. Your operational costs go up when seniority provisions permit excessive bumping (STEEL, July 8, p. 58). Maytag's seniority is built around job classifications and labor grades within a department. For example, one department may have seven labor grades and three job classifications in each grade. If a man in Grade 5 must be laid off, he can only bump downward in labor grades, and he can displace only the man in that grade with the least seniority. In prac-

tice, there can be only one bump per labor grade per man laid off.

Warning—Avoid "mutual agreement" and "union approval" clauses in your contract. Penalties for these clauses are time and money. Unions have already strapped some employers with provisions which deny the company from starting a new job until the union has agreed upon the job description and wage rate. It amounts to veto power over the installation of a new job.

The same is true in company-union committees affecting operations rightfully belonging to management. Here again, unions have forced their way into joint committees, setting labor standards and incentive rates. There is an obvious conflict of interest in this practice, and it results in wasted time before settlement is made.

Such activities are generally tied directly to competitive factors, and management must be able to make decisions and put them into action immediately. The union's position should be one of a watchdog—if an error is made or an employee is treated unfairly, corrective action should come through the grievance procedure.

Politics: Voting's Not Enough

Of prime concern to most thoughtful industrial relations ex-

ecutives is the union's growing political power. With all its shortcomings, collective bargaining is the most effective tool we have developed for settling differences between management and organized labor.

Warns John S. Bugas, vice president-industrial relations, Ford Motor Co.:

"Collective bargaining as we know the practice is not a preordained institution whose continued health and development will be automatic . . . Labor's objectives, to me, are quite clear and to be expected. One is to assure that the government will not serve as an effective brake or counterbalance to labor's forward drives; the second is to promote substantive objectives with respect to terms and conditions of employment through legislation rather than at the bargaining table . . . If labor achieves that political position, collective bargaining will become simply an interesting historical fact."

Many companies are no longer shying away from participation in politics.

They feel, like Fred A. Hartley Jr. (see Page 123), that participation is necessary if the proper balance of power between unions and management which labor law establishes is to be maintained.

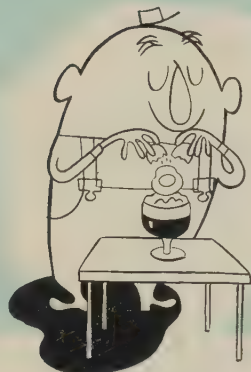
n the rise . . .

as higher standard of living . . .

Average Hourly Earnings

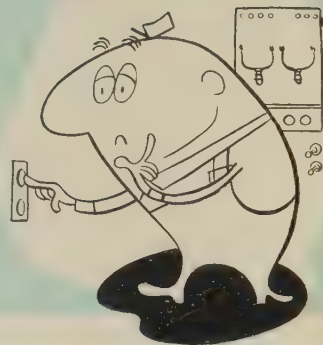
(Metalworking)

56	.....\$2.15
50	..... 1.57
47	..... 1.35



Average Investment & Net Property Per Hourly Employee (Ford Motor Co.)

1957	.....\$13,200
1940	..... 3,700



Check Their Gripes

You can debate the value of attitude surveys, but their popularity is increasing. Many industrial relations executives feel that they are at least a good starting point in designing an employee relations approach aimed at the individual. Clark Equipment Co. did a survey following a strike at one of its plants. "We needed to know more about what the individual employee felt about us," says Bert Walter, vice president-industrial relations.

The survey showed that basic attitudes toward the company and the individual's job were fairly constant throughout all plants—including the one which had just settled the strike. The differences between plants showed up in the major gripes and suggestions the employees made (see Page 125).

For example, in the plant which had the strike, the top three complaints were for more co-operation between union and management, re-evaluation of time study and incentive systems, improvement of the supervisory staff. At another plant, better housekeeping, better communications, better planning and scheduling of operations were the top items. At a third, the major complaints were against un-paved and unlighted parking lots,

lack of coffee vending machines, and lack of good ventilation. At only two of the seven plants were supervision and pay or incentives among the top complaint areas.

The survey highlighted specific areas which needed attention in each plant—many of them rather easily corrected. Clark officials reviewed results with plant managers and asked that corrective action be taken within three months if possible.

Give Them Better Bosses

One of the keys to the degree of success you'll have in aiming at the individual rests with your foremen. They're on the firing line with day-to-day contact with employees. They administer your labor contract; they are the basic communications link between you and the employee; they have a key role in motivating the individual. In short, to most employees, the foreman or supervisor is the company.

Because higher caliber men are coming into your plant, the management ability of your foremen becomes more important than ever before.

The selection of foremen has been pretty subjective—he's a conscientious worker, gets along well with fellow employees, knows his

job well, has good personal habits. Needed is more objective emphasis on the candidate's basic mental ability and his basic psychological interests in managing people.

Many companies like International Harvester Co. are turning to formal testing and screening procedures to select potential foremen. Candidates enter training programs designed to develop leadership characteristics and to teach the technical facets of the position. To eliminate hasty appointments, candidates are placed in foremen pools from which vacancies are filled as they occur.

Profile of a Good Foreman—Company studies made by George A. Fry & Associates, Chicago, indicate that the average foreman selected on a purely subjective basis ranks in the 25th to 35th percentile in mental ability. The consulting firm has found that successful foremen should rank at least in the 50th percentile.

Another trait of the successful foreman is a basic interest in people. Studies by the University of Michigan's Institute for Social Research show that foremen having high productivity records are "employee centered" as opposed to "production centered." Such foremen view their jobs in terms of human problems rather than rules, procedures, and the mechanics of

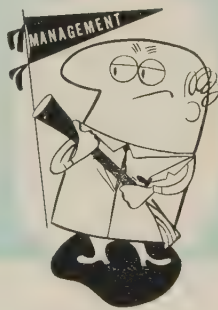
Guard your management rights and flexibility . . .

Does your labor contract include these provisions?

- Management has right to introduce new or improved methods or facilities, to alter or discontinue any operation.
- Selection and assignment of supervisors are the sole responsibilities of the company and not subject to grievance.
- The company has the sole right to determine the extent and schedule of operations.
- The union agrees not to oppose the introduction or operation of new equipment in processes or production methods.
- Management has the right to establish a new job or change a job's content and rate classification without prior union approval. Decisions may be challenged through normal grievance procedure.

Does it avoid these?

- Mutual company-union agreement clauses.
- Joint union-management committees.
- "Union approval" required provisions.



meeting production goals:

1. They emphasize training employees to do present jobs well and to prepare them for the next highest job. 2. They show more interest in the employee's problems, both on and off the job. 3. They are more understanding and less punitive when mistakes are made.

Mental ability, personality traits, and basic psychological interests can be measured if competent psychologists do the testing. Regardless of how good your training program is, the individual will not develop into a good foreman if he does not have mental ability and interest in people.

Make Him Want To Do It

The areas which require the most emphasis in mapping out a program are motivation and com-

munications. They are basic, and the results are measured directly on the profit and loss statement.

As you shift toward more automation and technological improvement, the individual and his initiative, his co-operation, and acceptance of responsibility become increasingly important to you. It may be true that nobody will be needed to tend the machine in operation and that the handling and feeding of materials will be automatic. But how well that machine performs and how much you get out of it will depend upon the employee who sets it up, maintains it, and directs it.

The high caliber employee poses the challenge: How do we give him job satisfaction? How do we stimulate and motivate him to superior performance?

Good pay and security will continue to rank among the top basic

needs of the employee. But he'll be placing more emphasis on pride of work, on being recognized as an individual, on opportunities for growth and advancement.

Take a look at—and a tip from—the problems within labor unions. The unrest of the skilled worker stems primarily from the union's neglect to recognize him as being something "special." Efforts to organize white-collar workers can't get off the ground because these people fear they'll lose their identity as a "special" class.

Personalizing Profits

The big reason profit sharing has been so successful is that each individual can directly identify himself with the company. From the company's standpoint, profit sharing provides an effective channel of communications because every facet of its operation can be tied to the program.

Motorola Inc., Chicago, provides one of the best examples of good motivation and communication through profit sharing. Employees who started with the program ten years ago and contributed the maximum \$200 per year, now have a book value of \$10,697 each. Last year, the company's contribution amounted to 21 cents per hour per employee who made the maximum contribution. That didn't include any interest or dividends that the fund earned.

"When an individual has a personal stake of those proportions in working for you," says Kenneth Piper, director of human relations, "it means something to him when you talk about how increased costs cut profits."

Motorola ties scrap drives, safety, cost reduction, new installations, suggestions, and all such programs to profit sharing programs. Its communications system was put to a real test this year. The book value of its profit sharing fund shrank in 1956 because of market variations. On maximum individual accounts the value dropped \$800; with the company's contribution of \$1000, the individual's account went up only \$200.

Another Tip—A growing criticism of today's typical house organ is that the employee is getting weary of the "economic lesson" of

he month. Here Motorola had a natural: A basic lesson in free enterprise economics that had meaningful personal interest to every employee.

"We met the problem head on," says Mr. Piper. "We didn't attempt to ignore it or gloss over it. We got one of Chicago's top investment counselors to write an

article on what happened not only to all securities in 1956 but to those related specifically to the profit sharing fund. Employee reaction was excellent."

Motorola also feels that the employee newspaper is a basic communications tool to be aimed at the individual. The *Voice of Motorola* is edited by a paid editor who

co-ordinates the activity. Emphasis is on the employee's operation of the paper, with as little direction from management as possible. Reporters belong to a press club which meets regularly. An annual readership study is made to determine what the employees want to read. If a standard item doesn't get a 90 per cent vote of



Fred Hartley: Sound labor law helps . . .

Power Balance in Bargaining

● Thoughtful industrial relations executives are concerned about labor's growing economic and political strength. Collective bargaining—the most effective tool we have developed for resolving problems between organized labor and management—faces these threats to its survival:

1. Labor or management could gain enough economic power to reduce collective bargaining to dictation.

2. Either side could gain enough political power to supplant collective bargaining with government regulation.

Labor law is basic to maintaining the balance of power. STEEL interviewed Fred A. Hartley Jr., co-author of the Taft-Hartley Act, for his observations on the situation today. Now a consultant in Washington, the former New Jersey

congressman is pressing for changes in T-H. Mr. Hartley emphasized:

1. Management has been derelict in exercising its rights to communicate with employees. That right, denied under the Wagner Act, was restored under Taft-Hartley. Too many firms wait for a crisis before talking to their employees.

2. Management—and all business—must assume a bigger role in politics. Industry and business lost the last election—labor has 152 subservient members in the House of Representatives, and it has packed the labor committee.

Here are Taft-Hartley improvements Mr. Hartley thinks you should be seeking:

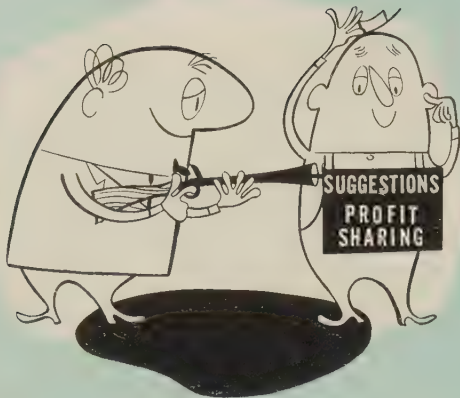
Secondary Boycotts—T-H provisions covering them need to be strengthened to make any such action illegal—whether it is directed at employees, employers, or government bodies.

Picketing—The Kohler Co., Southern Bell Telephone Co., Perfect Circle Corp., and Westinghouse Electric Corp. incidents point up the need here. When a picket line becomes an instrument for intimidation and violence, it should be outlawed. Let's define peaceful picketing. Let's limit picketing to company employees and prohibit goon or "educator" squads.

NLRB Jurisdiction—Small businesses and those not engaged in interstate commerce are not getting adequate protection. States should be given more rights to deal with labor problems, of the NLRB's jurisdiction should be extended.

Antitrust Laws—The economic strength of unions, particularly against smaller companies, has shown the need for placing unions under the same monopoly restrictions as business.

Right - To - Work Laws—Employees should have the right—but they should not be compelled—to join labor organizations. Compulsory unionism is giving the unions a monopoly over the nation's employment. State right-to-work laws—18 states have them—are a step in the right direction. But an amendment to T-H, such as the exemption of the Railway Labor Act, could make them meaningless. What's needed is a right-to-work provision in Taft-Hartley, or an amendment to the Constitution.



These programs are good because they . . .

Aim Motivation at the Individual

Suggestion Systems—

1. Set up a formal administration system so that all suggestions are processed promptly.
2. Size of awards should be commensurate with the value of the suggestion.
3. All suggestions, whether usable or not, should be acknowledged. Individuals whose suggestions are adopted should be given recognition.

Profit Sharing Plans—

1. Be sure your program permits sufficient "profits" for the individual to stimulate his active support.
2. Promote the program continuously by tying in profits to such things as safety, scrap reduction, and improvement suggestions.

approval, it is dropped.

In making sure the paper appeals to the individual, certain things are taboo: Presidential editorials and regular handouts, product sales pitches, news about sales conventions, the reproduction of speeches given by company brass. The goal is to get news and pictures into the newspaper about as many employees as possible—what they're doing and what they're interested in. The newspaper is a company's best medium for giving the individual personal recognition.

I'm a 'Company Man'

A good suggestion system helps to put emphasis on the individual. Too many firms consider suggestion plans as a business proposition—you pay out a certain percentage of annual savings that the idea produces; you're buying something. If the program is set up properly and promoted well, its greatest value is in communications.

When an employee submits a suggestion for which he knows the company will benefit more than

he does personally, he's identifying himself with the company. You must create the climate to get an employee to search actively for ways to improve your operations.

A. O. Smith Corp., Milwaukee has had a "satisfied customer" program running since 1954. Its theme is: The satisfied customer keeps the firm in business and keeps the employee working. The first year the program stressed the need to be competitive with other producers' goods in quality, cost, and dependability. When employees were asked for suggestions to improve quality, one plant averaged two ideas per employee.

Last year, the program aimed at employees "re-searching their jobs" for ways to improve quality and cut costs. To stimulate employee thinking, a slide film was prepared by the training department to show employees how to study their jobs and which areas might be most productive of good ideas. Result: In 1956, employees submitted more than 1600 ideas; almost 500 were adopted; awards totaled \$23,600.

One of A. O. Smith's ideas that may help your company is the establishment of a suggestion plan "Hall of Fame." Pictures of each individual who has received \$500 or more for an idea he submitted are displayed in the plant's lobby.

Devise New Incentives

If you're relying primarily on the piecework type of incentive plan, it'll pay you to begin thinking about some kind of replacement.

Like most incentive systems, A. O. Smith's base rate reflects what the average worker can produce. With the narrowing of the wage gap between skilled and semi-skilled workers, some skilled men are finding their pay checks smaller than their less skilled fellow employees. Reason: On much of the new equipment and automated installations, the machine controls most of the work cycle. On most piecework jobs involving older equipment, the man controls most of the work cycle and with extra effort can earn more money.

It leads to this situation when

seniority provisions permit bidding for jobs: Senior and more skilled workmen are taking the piece-rate jobs to fatten pay envelopes even though they don't use their skill to best advantage and must work harder. This leaves the skilled work to the younger, less experienced employees—boosting the cost of training, scrap, and machine downtime. Poor morale is a side effect.

The skilled labor shortage is focusing attention on the need for more emphasis on training programs. Fortunately, properly established training programs provide one of the best opportunities to aim your employee relations program at the individual—and you can reach so many this way. For example, nearly half of Inland Steel Co.'s 18,500 employees are in some sort of training.

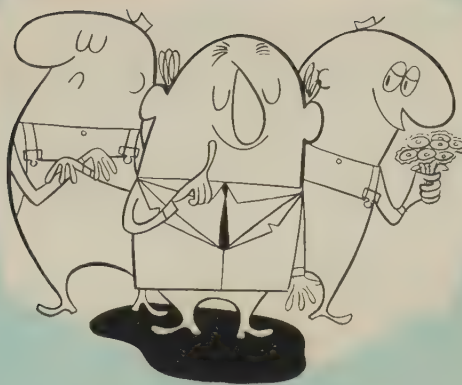
Make on-the-job training the responsibility of the foreman or immediate supervisor. It provides another avenue for the foreman to communicate with the employee on something other than a "let's get it at the work" basis. To the individual, it's a constant reminder that the foreman and the company are interested in helping him get ahead.

Many companies that have relied upon the traditional "understudy" type of training for skilled jobs have found themselves short of capable men during periods of expansion. To correct this situation, they're turning to more organized programs designed to speed up the individual's total exposure to all facets of the job. The era of haphazard exposure, "taking 20 years to learn the job like my father and I did," is past.

If you're in an industry in which radical technological changes are taking place, on-the-job training will not meet your needs for the higher level jobs created—machine operators will become skilled maintenance people, understanding both the machine and its role in the process; clerks will become programmers for electronic data processing equipment.

Train for Tomorrow's Jobs

One approach to the problem is that of Inland Steel Co. (see page 126). All employees are eligible.



An attitude survey will help you find out . . .

What Do Employees Think of You?

Following a strike at one of its plants, Clark Equipment Co. decided to do an attitude survey. With a 23 per cent return from its nearly 15,000 employees, it found:

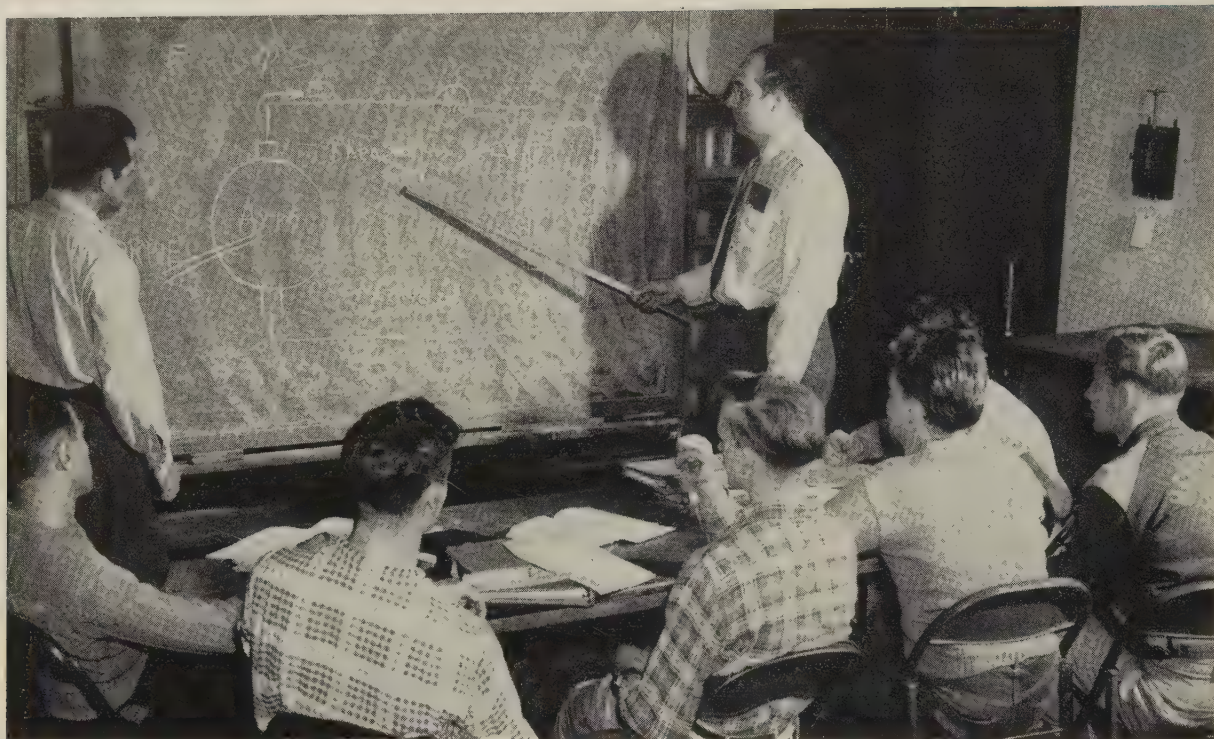
89.7 per cent thought the company was definitely a good place to work, compared with 1.9 per cent who had no comment or said no.

74.7 per cent were definitely satisfied with their jobs; 4.3 per cent were looking for advancement; 1.3 per cent were definitely dissatisfied.

But the real value of the survey came from employee's major gripes and suggestions. No checklist was provided—complaints and suggestions were the individual's own ideas and opinions. "At each plant, emphasis differed," says Bert Walter, vice president-industrial relations, "and we got a sharp picture of areas which needed our attention. We set up programs in each plant which were tailored to the comments of the employees."

Here are the areas employees commented about most:

- Need better co-operation between union and company, among foremen, departments, and shifts.
- Need attention to time study and incentives—adjust rates, eliminate incentives or give to all, set up bonus system.
- Need workable check-out system for tools and gages.
- Lax and poor supervision—need tact and diplomacy; too much favoritism, lack of job knowhow.
- Improve communications—among management and employees, among shifts and departments, tell more about proposed changes in company and departments.
- Need better housekeeping.
- Need better planning, systems, and organization.
- Air condition offices.
- More pay, equalize pay of men and women.
- Set up suggestion system.



Training: Aim at Future Jobs . . .

Automation and our rapid technological advances are creating new types of jobs which demand more knowledge, more skill, more responsibility. On-the-job training meets today's job requirements. More emphasis is needed in preparing employees for tomorrow's jobs.

Inland Steel Co. has approached the problem by developing a training program at Purdue University for its employees. Its basic objectives: Give employees a broader educational background which will help them understand the activities in a steel mill and make their transition to new type jobs easier.

Courses cover mechanics, steelmaking, and electricity. Each takes two years requiring 3 hours in class two nights a week for 33 weeks each year. The curriculum includes basic principles of mathematics, chemistry, physics, and other sciences as they pertain to steel mill operations.

About 425 students have been graduated since the course started in 1948. Experience indicates that better than half the students later earn promotions in their jobs. One employee, a motor inspector, has completed all three courses.

to take the Inland-Purdue training program. Not all applicants will have the background or ability to complete the course. To discourage the impossible, the orientation and placement program is designed to let employees drop out on their own initiative rather than placing the burden on the company of having to tell the individual he can't take the course.

The course is offered without promise of promotion—although better than 50 per cent of the grad-

uates eventually move up. The basic objective is to give employees an educational background in steel mill operations and procedures. With this, they should be better able to learn and adapt to any new job that radical technological changes create.

Compare the composition of your present labor force with what it was in the immediate postwar years. You'll find proportionately more of today's employees are in the semiskilled and skilled classifi-

cations and fewer in the common laborer grades. Also check your plant and equipment investment per employee during the same period.

Both comparisons will emphasize the increasing importance of the individual to your operations. How well your productive machine operates depends upon how well you train, integrate, and motivate him to superior performance.

You can do it best by treating him as an individual.

Technical Outlook

TANIUM ALLOYS—Two new ones are announced by Mallory-Sharon Titanium Corp., es, Ohio. MST 2.5Al-16V (2.5 per cent aluminum, 16 vanadium) is produced as sheets which can be readily formed, then heat treated to give a yield strength of 150,000 psi. MST-821 (82 per cent aluminum, 2 columbium, 1 tantalum) is a weldable sheet and bar material with good high temperature strength. In the 400 to 1000° F range, it is said to have a 200° F strength advantage over the fully weldable 5Al-2.5Sn alloy.

HTER BEARING SEALS—Hoover Ball & Bearing Co., Ann Arbor, Mich., reports it's using Teflon for contact seals of ball bearings. It's chemically inert, tough, withstands high temperatures, and has a low coefficient of friction. The material also is said to improve lubricant retention.

OL CHECKERS—How can you ferret out a broken tool before it does any damage? The problem is becoming increasingly important to tool makers and users of automatic machines that run too fast for unaided observation. M. V. Jones, Jones & Lamson Machine Co., cites two possibilities: On turret-type machines, use "catfishers" around the turret backs that touch good tools but not defective ones; use a microphone to detect unusual vibration (common to tool malperformance) and stop the machine.

ELECTRICITY FROM GASES—The direct conversion of the chemical energy of gases into electricity has been accomplished by researchers at National Carbon Co., Parma, Ohio, a division of Union Carbide Corp. It's done in a fuel cell which contains catalyzed carbon electrodes (they're hollow and porous) through which oxygen and hydrogen flow. An electrochemical reaction is developed when the gases diffuse

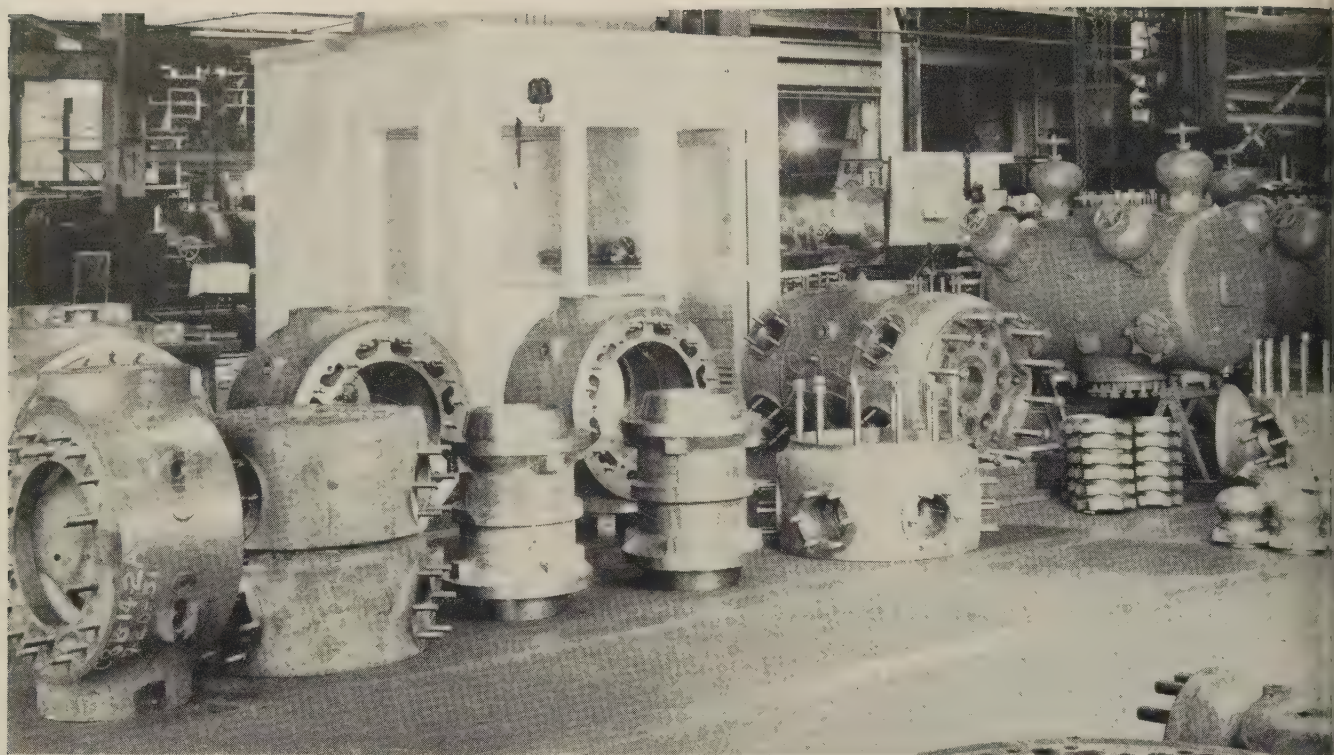
through the electrodes and contact a solution of potassium hydroxide which is used as electrolyte. The fuel cell is ideal for high current, low voltage use. First application: Power for a U. S. Army Signal Corps mobile radar set.

BETTER STRIP—An ultrathin strip made of copper clad with silver is said to offer improved electrical conductivity and increased resistance to atmospheric corrosion and oxidation at high temperatures. Produced by American Silver Co., Flushing, N. Y., it is used in miniature, high temperature coils, high frequency conductors, connectors, tabs on step switches, and radar cable braiding.

NEAT FINISH—Precision cutting heads for Schick shavers are cleaned and polished on two wheels which combine cloth and tampico. The alternated brush and impregnated cloth construction cuts friction heat and part damage, says Hanson - Van Winkle - Munning Co., Matawan, N. J.

KEEN MEMORY—IBM has developed a "memory" device for high speed, high capacity electronic computers that responds in a hundred millionth of a second. The unit uses a miniature printed circuit of lead at temperatures close to absolute zero. It needs only a third of the current required to drive ferrite memory units and responds about a hundred times faster.

BUMPER CROP—The operation line-up at Ford's Monroe, Mich., bumper plant goes like this: 1. Draw. 2. Rough trim. 3. Restrike and cup. 4. Separate two connected bumpers. 5. Finish trim. No. 2 and 3 will be done by four Hamilton presses, valued at \$1 million. They are 1500 ton, single action, underdrive units with 60 x 156-in. beds.



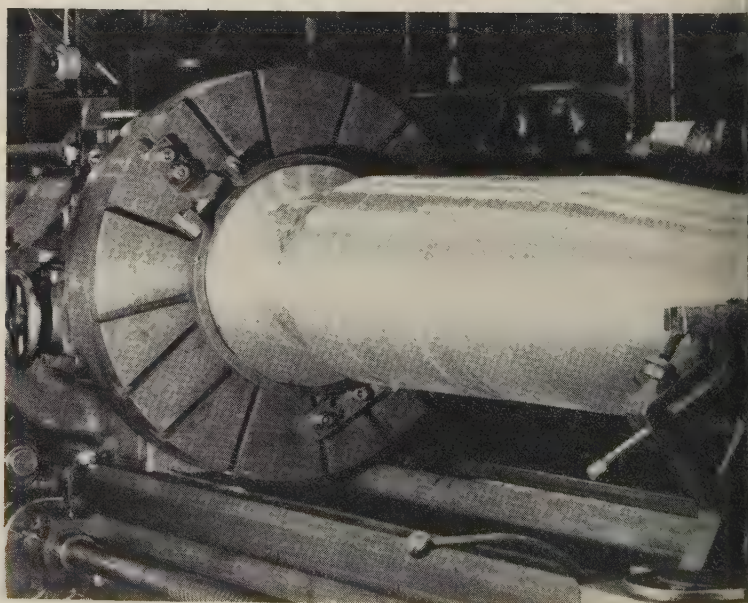
COMPRESSOR PARTS—Ductile iron doubled the pressures at which compressors for natural gas lines could operate. Complex gas passages and water jackets did not present difficult casting problems

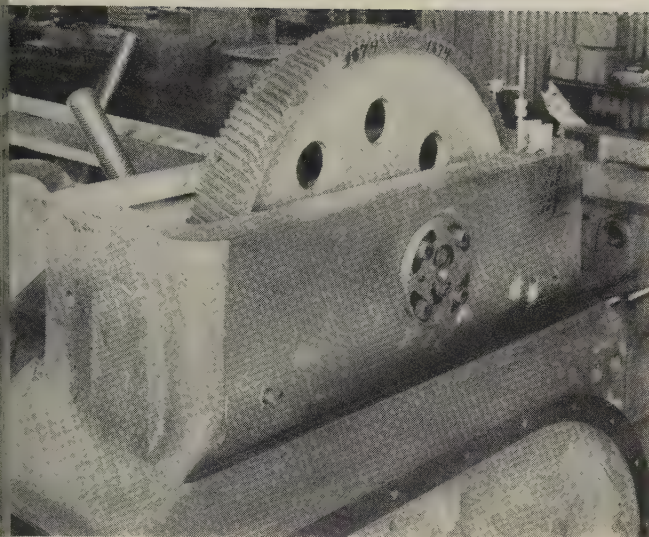
DUCTILE IRON:

Why It is Popular



HYDRAULIC COUPLING—350 hp are transmitted from the gear train on an engine to a mechanical supercharger by this coupling which is 13 in. in diameter. Cast in shell molds, the ductile iron vanes are less than $\frac{1}{8}$ in. thick



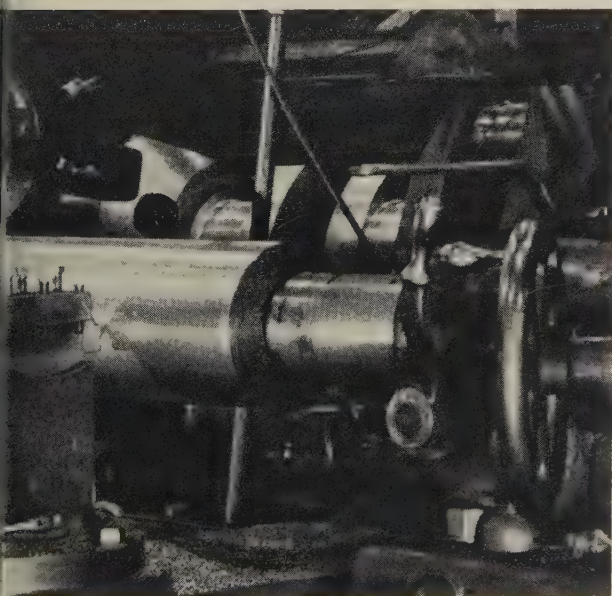


GARS—Air quenching the gear blank gives the 250 to 275 shell required in the gear teeth. Ductile iron gears stand up under a pulsating load, resist wear, do not pit, and run quietly

THESE ILLUSTRATIONS show how the advantages of ductile iron have been applied by Cooper-Bessemer Corp., Mt. Vernon, Ohio.

The material's acceptance is based on: 1. Strength and toughness. 2. Castability. 3. Heat treatability. 4. Vibration damping capacity. 5. Good high-temperature durability (low growth, resistance to scaling, and stability). 6. Corrosion resistance. 7. Economy.

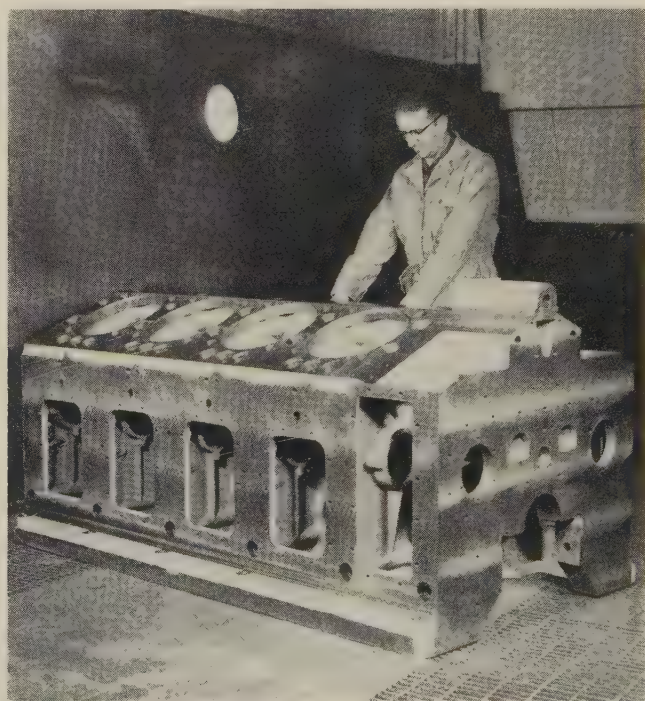
Prediction—C. William Gilchrist, foundry superintendent of Cooper-Bessemer, says potential uses may make ductile second only to gray iron as a cast material.



SHAFTS—Extension shafts for an engine-driven generator weigh 2000 to 5000 lb. Ductile iron savings are estimated at 55 per cent



CRANKSHAFT—This 80-60-03 ductile iron casting weighs 3500 lb. Savings are estimated at 50 per cent



DIESEL BLOCK—The Navy has accepted the material for use aboard fighting ships. This engine block is made of 60-45-10 ductile and weighs 7000 lb

Tempering Data and Curve for Casting No. 3

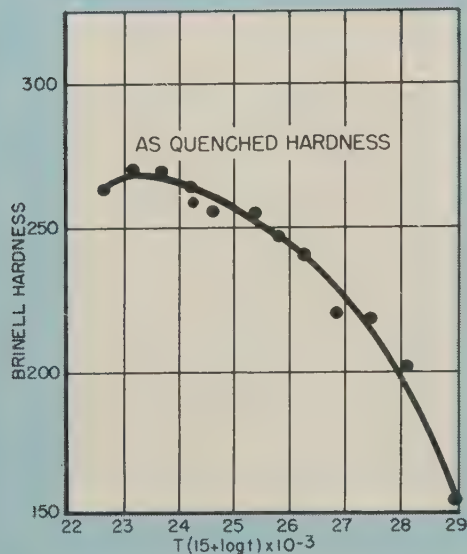


Fig. 1

Sample	Temperature °F	Time, Hours	Bhn
As-quenched			263
3-1	1050	1	262
3-2	1050	2	268
3-3	1050	10	265
3-4	1150	½	269
3-5	1150	1	261
3-6	1150	2	257
3-7	1150	5	255
3-8	1150	20	241
3-9	1250	1	249
3-10	1250	5	220
3-11	1250	10	218
3-12	1250	24	201
3-13	1250	90	156

DUCTILE IRON:

How Heat Treatment Upgrades It

HEAT TREATMENT may be able to save heats of 90-65-02 and 80-60-05 ductile iron which do not meet specifications as cast. The conclusion is drawn from tests made at General Electric Co.'s Materials & Processes Laboratory on a 60-40-15 ductile iron in the as-cast, annealed, normalized and tempered, and oil quenched and tempered states.

Procedure—Cast blocks, 5 x 7½ x 12 in., were cast as part of an 8000-lb heat. The blocks were well risered over a 5 x 12 in. face. Ladle analysis: Total carbon 3.15, silicon 2.79, manganese 0.22, magnesium 0.072, phosphorus 0.022, sulfur 0.008 per cent.

The first casting was tested in the as-cast condition. Casting No. 2 was annealed at 1650° F for 6 hours, furnace cooled to 1325° F, held for 12 hours, then furnace cooled.

By R. S. ZENO and C. D. WALKER

Large Steam Turbine-Generator Dept.,
General Electric Co.,
Schenectady, N. Y.

The third casting was normalized at 1600° F, then air cooled and tempered, using the curve (Fig. 1) to Brinell hardnesses of 239 and 196.

The fourth casting was austenitized at 1550° F for 6 hours, oil quenched and tempered, using the curve (Fig. 2) to Brinell readings of 269 and 232.

After casting No. 4 was heat treated and tested, a block 2½ x 7½ x 12 in. remained. It was re-austenitized at 1550° F for 6 hours, oil quenched and tempered, using the curve (Fig. 3) to 298 Brinell.

Tempering—Several 1-in. cubes were cut from casting No. 3 when it was in the normalized condition and from castings No. 4 and 4A as

oil quenched. The cubes were tempered and their hardness measured. Times and temperatures for each cube are shown with Fig. 2, and 3.

The hardness is a function of both temperature and time. The parameter of time and temperature can be calculated from the equation:

$$M = T (C + \text{Log } t)$$

where

M = the tempering parameter

T = temperature in °R or 4/9 (°F - 32)

C = 15, the material constant

t = time, in hours

The parameter is not valid for tempering temperatures are above the lower critical (*A*₁) line.

Metallurgy—The unetched microstructures of the as-cast and heat treated castings were about the same. Much of the graphite was not truly spheroidal and might

Tempering Data and Curve for Casting No. 4

Sample	Temperature °F	Time, Hours	T (15 + Log t)	Bhn
As-quenched				274
4-1	1050	1	22,700	269
4-2	1150	1½	23,700	256
4-3	1150	2	24,600	253
4-4	1150	5	25,300	243
4-5	1150	20	26,200	226
4-6	1250	1	25,700	245
4-7	1250	5	26,800	216
4-8	1250	7	27,100	223
4-9	1250	10	27,400	206
4-10	1250	16	27,700	197
4-11	1250	24	28,000	159
4-12	1250	90	29,000	156

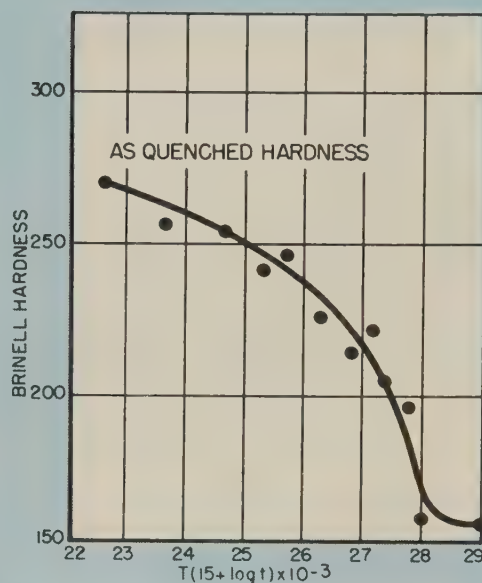


Fig. 2

etter be classified as "crab" graphite. While this condition is not necessarily harmful to mechanical properties, there was a sizable number of nitride inclusions mixed with minute graphite particles in clusters or stringers—

which are harmful to tensile ductility. Porosity and shrinkage voids were practically nonexistent.

Microstructures of the castings consisted of varying amounts of ferrite, pearlite, and nodular graphite. The cooling rates of

the oil quenched parts were not fast enough to produce martensite.

The normalized material had more pearlite than the oil quenched samples. The higher austenitizing temperature apparently raised hardenability above that of oil

Tempering Data and Curve for Casting No. 4A

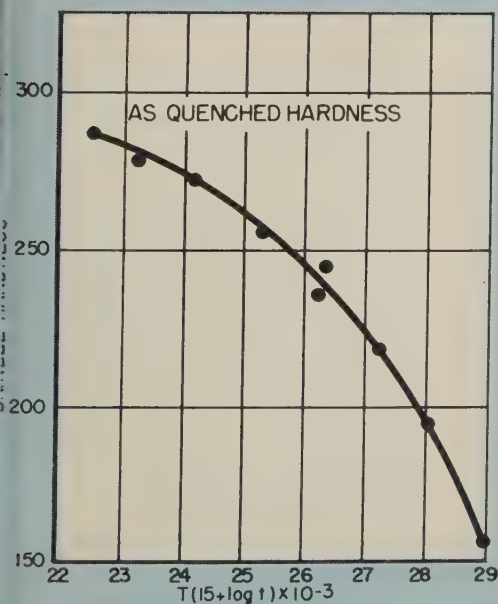


Fig. 3

Sample	Temperature °F	Time, Hours	T (15 + Log t)	Bhn
As-quenched				297
4A-1	1050	1	22,700	287
4A-2	1050	3	23,400	280
4A-3	1150	1	24,200	274
4A-4	1150	5	25,300	258
4A-5	1150	20	26,200	245
4A-6	1200	6	26,200	239
4A-7	1250	7	27,100	223
4A-8	1250	24	28,000	198
4A-9	1250	90	29,000	156

Tensile and Hardness Properties

Casting	Condition	Bhn*	Tensile Strength, psi	Yield Strength 0.2% Offset, psi	Elongation in 2 in. %	Reduction in Area %
1	As-Cast	239	84,000†	67,000	3.5	1.9
			85,500	66,000	2.5	2.5
			80,700‡	63,000	2.0	2.0
2	Annealed	150	61,800	44,500	14.0	13.0
			61,200	43,500	16.0	13.0
			62,900	44,000	18.5	17.7
3	Normalized	263				
3	Normalized & Tempered	196	90,800	65,500	6.5	4.3
			91,000	64,500	7.5	5.8
			88,900	62,000	8.0	5.0
3	Normalized & Tempered	239	99,000	69,000	5.0	3.1
			102,400	72,000	6.0	4.3
			101,000	74,500	5.0	3.9
4	Oil Quenched (First Quench)	274				
4	Oil Quenched & Tempered	232	86,100‡	68,000	3.0	2.3
			103,900†	66,500	9.0	7.7
			101,000	68,500	7.0	6.6
4	Oil Quenched & Tempered	269	117,800	79,000	5.0	5.0
			106,800†	78,000	3.0	2.7
			112,600†	76,500	4.5	3.9
4A	Oil Quenched (Second Quench)	297				
4A	Oil Quenched & Tempered	298	137,500†	97,500	6.0	3.9
			127,000	87,500	5.0	3.5
			121,250†	97,000	4.5	3.1

*Average of six readings. †Small slag inclusion. ‡Large slag inclusion.

quenched material by producing large austenitic grains and increasing the quantity of carbon in solution at the austenitizing temperature.

Casting 4A contained more pearlite than No. 4. The smaller section enabled 4A to cool more rapidly from the austenitizing temperature. Tempering caused pearlite structures to spheroidize.

The prolonged hold slightly above the lower critical line should have caused casting No. 2 to have a structure of ferrite and graphite.

However, there was a small amount of pearlite present, perhaps due to incomplete austenitizing.

Mechanical Properties — Tensile strengths of treated castings are listed in the table. Elongations were on the low side, probably because of the amount of inclusions and the presence of crab graphite.

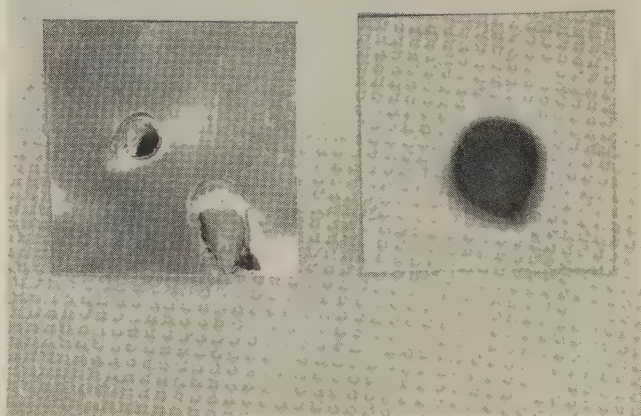
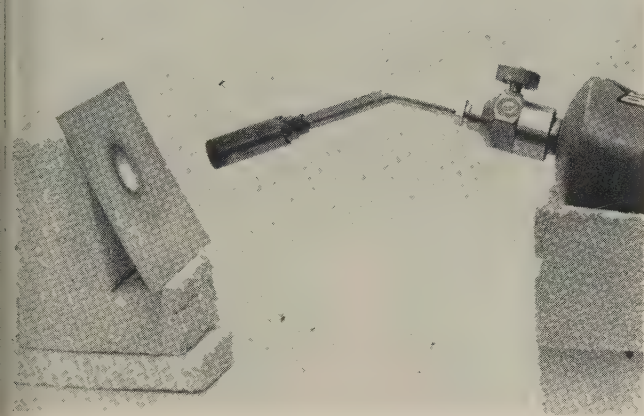
Heat treatment alone enabled the 60-40-15 grade of ductile iron to meet 90-65-02 and 80-60-05 specifications.

At the same hardness level, heat

treated ductile iron has a better combination of strength and ductility than as-cast material. Compare castings 1, 3, and 4.

V-notch Charpy curves were determined. They are similar in shape to those of steel but are at much lower energy levels. Impact energy absorbed was greater for ferritic (annealed) than pearlitic (normalized) ductile iron.

• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.



Coated aluminum (left) resists 1800° F. It burns holes in untreated sample (right)

Coating Beats Heat

New ceramic insulates aluminum and prevents melting at 1800° F. Immediate uses: Supersonic missiles and aircraft. It also works on aluminized steel

By DR. PAUL A. HUPPERT
Director, Ceramic Coating Dept.
Gulton Industries Inc.
Metuchen, N. J.

A NEW ceramic coating 0.0015 in. thick protects aluminum and its alloys from temperatures up to 1800° F.

That's hot enough to melt a hole in an unprotected sheet in as little as 30 seconds. (Aluminum and its alloys melt between 1250 and 1350° F.)

The coating also protects steels aluminized by hot dip or spray. Performance is similar to that of stainless steels. Cost is much less.

Significance — Such protective devices are good news to plane and missile makers. Speeds up to 2000 mph develop temperatures as high as 700° F, limiting aluminum's usefulness. By coating both

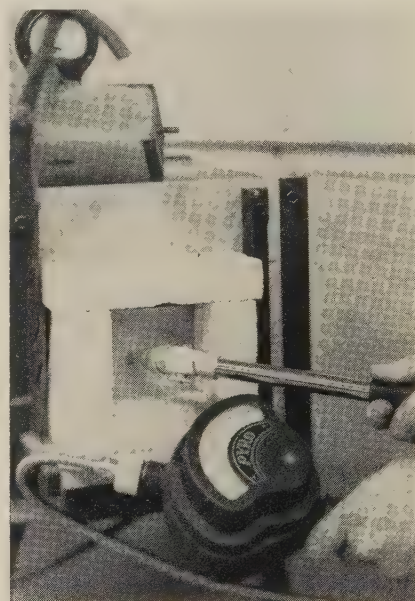
sides of the metal, you can develop a kind of rigid sandwich, using rather thin gages of aluminum to whip weight and volume problems. Parts coated on one side have lower heat resistance.

Composition—Made and developed by Gulton Industries, the coatings have these components:

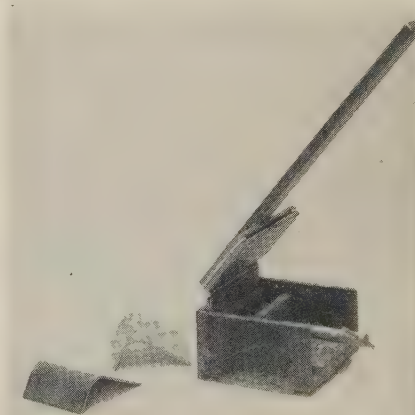
1. A low-melting glass. (Either commercial types or a high lithia, frit type for low melting alloys.
2. Refractory additives. (Titanium, zirconia, magnesia, silica.)
3. Fluxing agents. (Lithium compounds are preferred.)

The coatings have a high degree of adherence to the base metal. They withstand impact shock, flame impingement, thermal shock, and endurance tests. They add practically no weight or volume to a coated part.

Here are some of the alloys which work successfully with the



Window of electric furnace is a coated sheet of aluminum. Metal starts to soften around 1550° F; coating remains intact



Coated samples pass standard bend test for adherence. Other tests: Falling weight and accelerated spalling

COATING BEATS HEAT . . .

coating: 24S, 75S, Alcoa X2219, North American Aviation 42B, regular alloys of Group 6 (61S, 63S), Armco's aluminized steel, low and high carbon steels, and alloys which have been aluminized.

Heat Treatment—A portion of the development work covered the influence of heat solution treatment on the tensile strength of coated 24S and 75S alloys. Combining heat treatment and firing of the coating shows promise, thanks to the fluxing action of lithium compounds. They widen the time and temperature ranges for firing. It is also possible to follow firing by a water quench prescribed by some manufacturers.

Preliminary results show a loss of less than 12 per cent in ultimate tensile strength from firing the coatings. Additional heat treatment controls applied during or after the firing will probably reduce that figure.

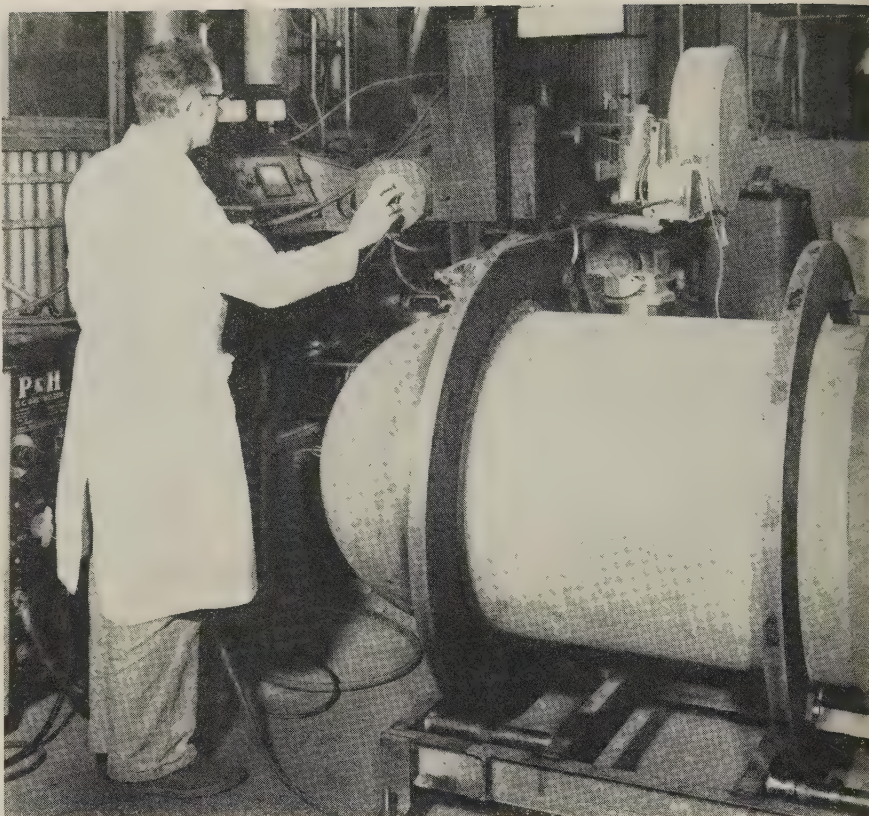
Tests—Gulton Industries combines impingement with a thermal shock test. During an 8-hour period, the specimen is removed and quenched in cold water every 30 minutes and reheated. An equivalent test lasts for 2 hours, with quenches every 15 minutes.

Coatings stand up under both tests. Several examples are being examined for longer periods of service.

High Temperature Endurance—A small, box-type electric furnace was modified to hold a coated specimen so that a ½-in. square on one face was exposed to the room atmosphere. During heating, the outside temperature of the specimen is measured every 15 minutes.

Test plates begin to soften at 1500 to 1550° F, although the coating remains intact. (A lower value than that must be estimated because an insulating blanket forms under stagnant heat conditions. That and a heat reflection factor affect temperature measurements.)

Drawbacks—The coatings have limited chemical resistance and surface hardness. Suggested solutions: A corrosion resistant layer over the ceramic coating; a compromise coating combining the properties of thermal and chemical resistance.



Operator adjusts speed of automatic, submerged arc welder. Tank holds 3000 psi for guided missile, weighs less than 600 lb. After treatment, weld develops 200,000 psi

Better Welds for Missiles

CONSUMABLE weld inserts insure x-ray quality welds in guided missile air tanks made at Research Welding & Engineering Co., Compton, Calif.

The tanks are 60 in. long by 30 in. in diameter. They must hold 3000 psi of air, yet weigh less than 600 lb.

Function—The inserts, made by Arcos Corp., Philadelphia, eliminate the need for back-up rings. They reduce weight, and also permit convenient welding from one side.

Such inserts are part of a process which places a ring of carbon, low alloy, or stainless steel between metal sections to be joined. For example, Arcos 1722-AS material is used for the root passes between the ¼-in. thick heads and the 5/16-in. body. The tanks are made of SAE 4335.

Production—After preparation, the root pass is formed by fusing the insert to the base metal with

an automatic, inert gas shielded, tungsten arc. (Frequently, it's done with manual equipment.)

The weld is completed by submerged arc welding with Arcos Chromenar CMV wire. Heat treatment of the weld develops a tensile strength of 200,000 psi, which matches that of the base metal.

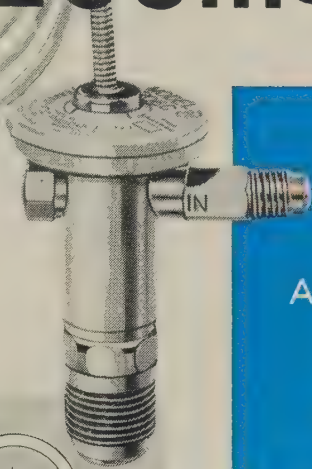
Other Applications—The insert method has proved especially effective in pipe butt welds for conventional and nuclear power plants. It is said to produce sound, crevice-free root passes with smooth inside contours.

Consumable inserts are catching on for many applications where welds are accessible from one side only.

Studies of this method have shown that, after fusing, the weld puddle shrinks slightly, drawing the inside surface smooth and even with the vessel's walls.

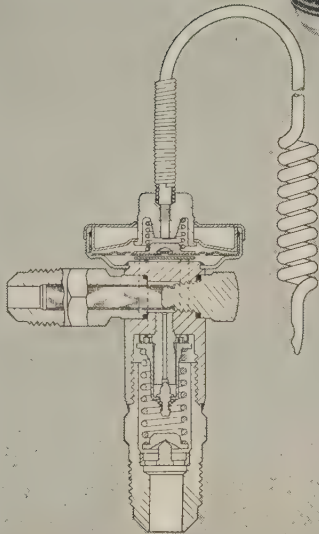


STAINLESS...Where it Counts!



How Stainless Steel From **THE HOUSE OF STAINLESS**

Assures Uninterrupted Performance
of Vital Parts in Control Valve
for Automotive Air Conditioners



Photos, courtesy Controls Company
of America, manufacturers of A-P
Controls, Milwaukee, Wisconsin

It's our job at The House of Stainless to help you apply stainless steel where it will do the most good in your product.

A case in point is the experience of this manufacturer of thermostatic expansion valves. In developing their Model 206-C valve which is being used for automotive air-conditioning service, A-P engineers worked closely with CSS metallurgists to select the proper type of stainless that would give each vital part the quality needed for its specific job. Parts subject to greatest wear are made from stainless with the maximum wear resistance, and the possibility of corrosion is eliminated. In every way, the benefits of this collaboration are reflected in the outstanding performance of the product today.

Assistance like this makes The House of Stainless more than just a source of supply. We're always ready to help you apply stainless steel to the best possible advantage—in improving the production, performance and customer-acceptance of your product.

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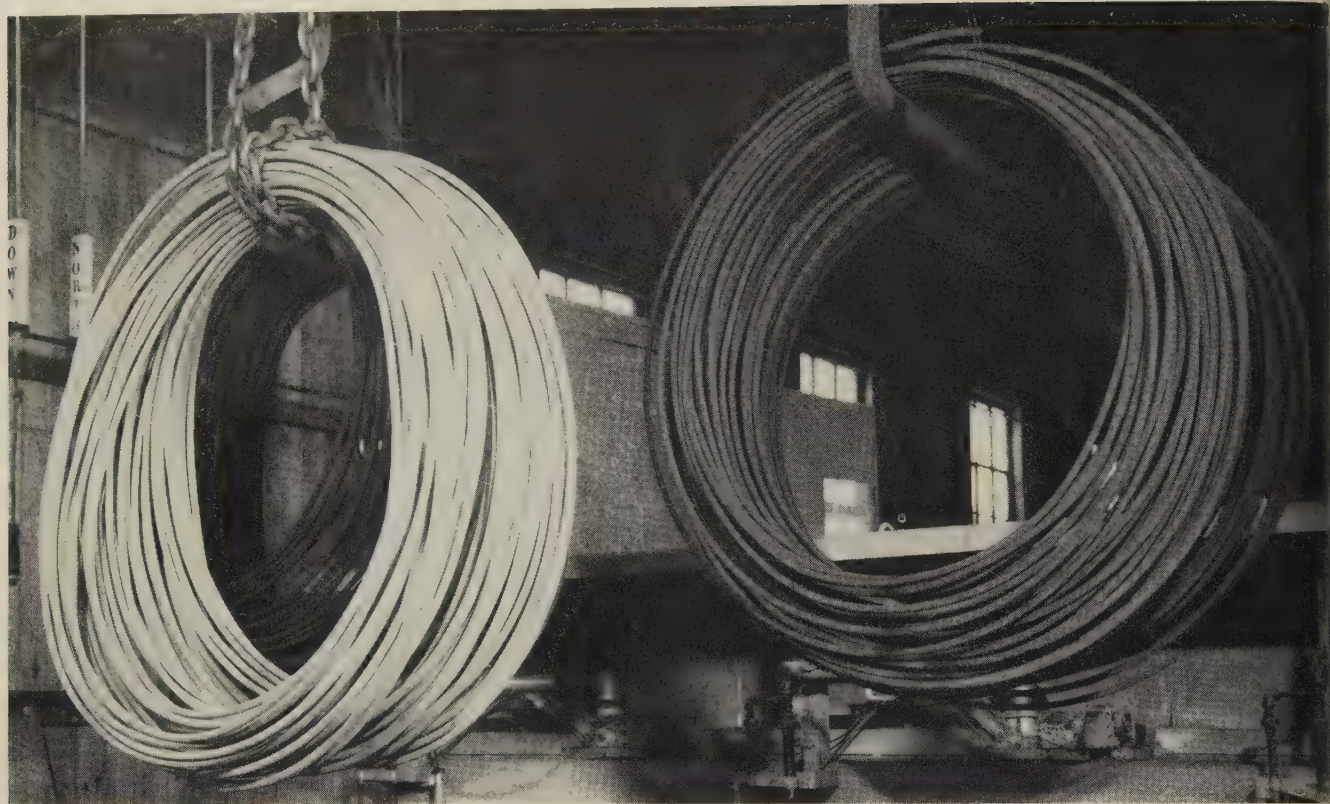
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After being descaled in the salt bath and water rinsed, coils are dipped in 19 per cent sulfuric acid, rinsed, then dipped in a nitric-hydrofluoric acid solution to

brighten, as shown at left. Following a water rinse, the coils are immersed in the salt bath again to provide an oxide coating, as shown on coil at right

Salt Bath Works Four Ways

Specialty steel mill uses it to descale, oxidize, stress relieve and degrease stainless wire and rods. Outstanding advantage is bath's high oxidizing power

THE MOLTEN salt bath that Northeastern Steel Corp., Bridgeport, Conn., installed when it converted to a specialty mill operation does four things:

- It descales stainless and high temperature alloys.
- It provides an oxide which is an excellent drawing lubricant. The oxide also facilitates cold upsetting and spring winding in customer's plants.
- It is a stress relieving bath for stainless bars and wire.
- It degreases bars and wire.

Scope — Northeastern produces stainless wire, bars and rods in the 300 and 400 series and high tem-

perature, corrosion resistant alloys.

The steel is cast from electric or open hearth furnaces into ingot molds, heated in soaking pits, then rolled on a 34-in. blooming mill. Blooms or billets are ground, turned or scarfed, then rolled on a combination bar mill with a size range of $\frac{3}{8}$ to 6 in. Cold finished bars and wire also are produced here.

Descaling—The salt bath (Kolene No. 1 process) built by Kolene Corp., Detroit, converts the oxides produced by annealing or heat treating stainless to an oxide which is easily removed in brightening acid dips. Since the salt does

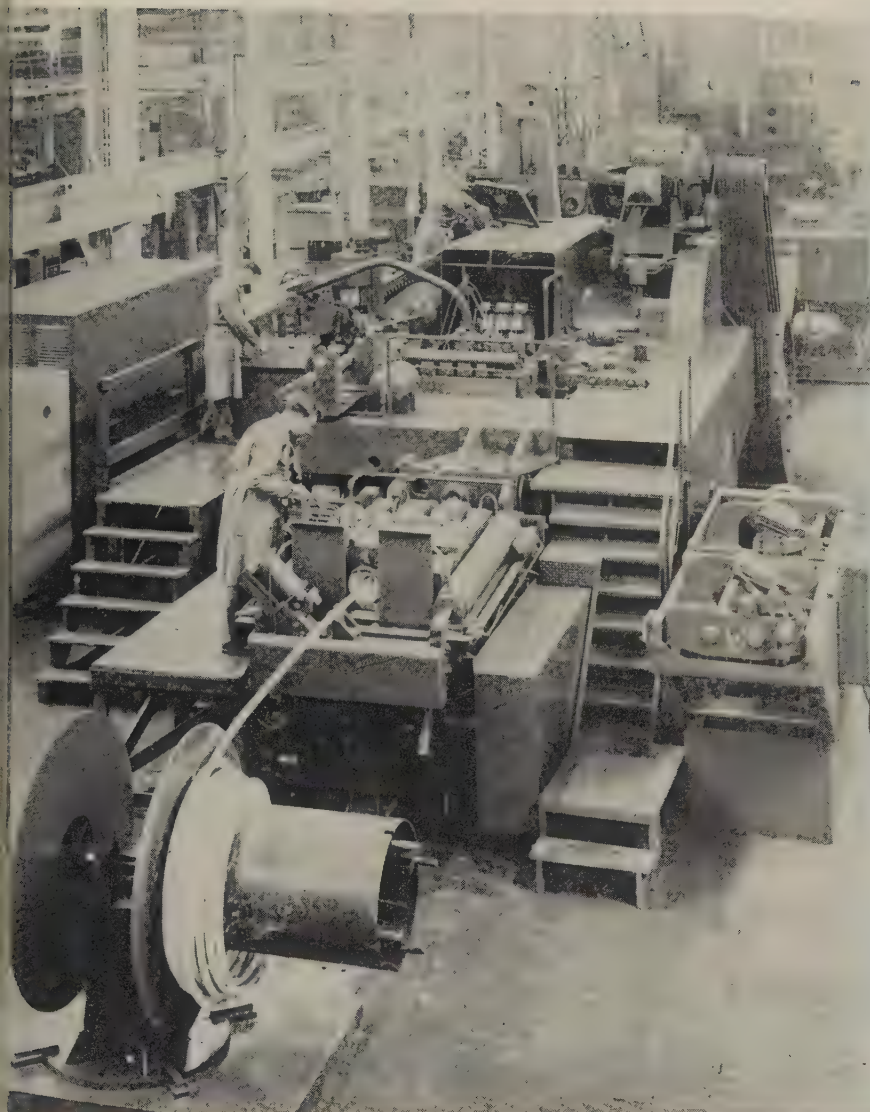
not attack the base metal at operating temperature, metal loss that would occur in straight pickling is practically eliminated.

Transformation of scale to a soluble form takes only a few minutes after the work reaches bath temperature. Acid time is reduced, and acid life is extended. The temperature drop in the bath averages about 20 to 30° F per load, depending on total weight; complete recovery to temperature is reached by the time the work load is removed.

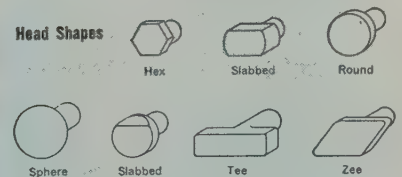
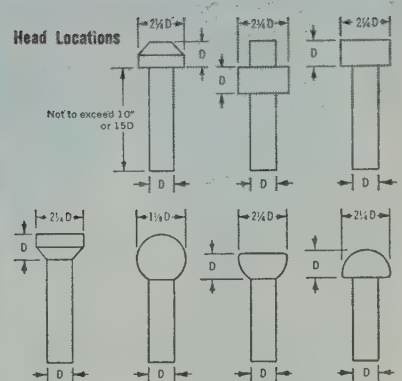
Insolubles—Operating at 800 to 1000° F, the bath is fluid enough to allow carbonates and other insolubles to settle out as waste products or sludge which are removed regularly.

No analytical control of the bath is necessary since no single component is exhausted. Dragout loss is small because the Kolene formula produces a low viscosity bath. Salt is added to maintain the liquid level.

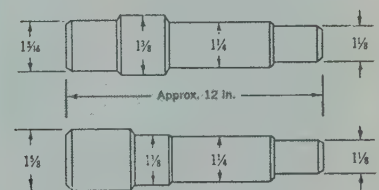
The bath is nonflammable, non-explosive and has no toxic fumes.



Raw material for this giant is wire or rod. Machine turns out extra large bolts headed, threaded, and ready for use. Top speed is about 40 a minute



Body Types—Showing Typical Dimensions



Here are some of the odd shapes the boltmaker can produce. The letter "D" has a maximum value of 1 1/4 in. Normal upset ratio is 2 1/4 times shank diameter

This Machine Makes 1 1/4-in. Bolts

Automatic cold forger will also turn out odd-shaped fasteners and components for automobiles, farm implements, aircraft, and electrical products. It's said to be world's largest

AN outsized cold forger is turning out 1 1/4 in., hex head cap screws up to 10 in. long at Cleveland Cap Screw Co., Cleveland.

The firm says it's the first automatic machine to make cold steel

forgings larger than 3/4 in. in diameter.

It will also make hexagon, square head, and high strength structural bolts measuring 7/8 to 1 1/4 in. in diameter.

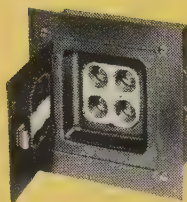
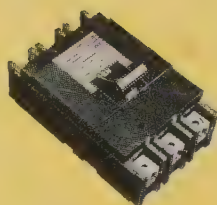
Greater Significance—The Cleveland firm believes that the greatest contribution of the machine is its ability to produce unusually large, odd shaped components such as those illustrated above.

It is also expected to compete successfully with machining and hot forging methods in producing industrial parts: Pinion drive, pump, and transmission shafts; in-

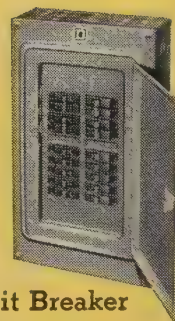
(Please turn to Page 144)



• Safety Switches and Industrial Circuit Breakers



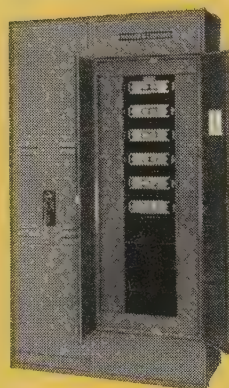
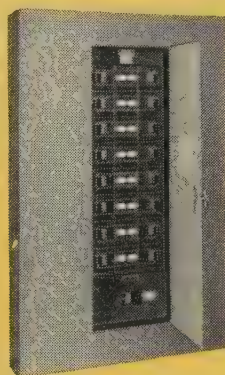
• Fusible and Circuit Breaker Load Centers



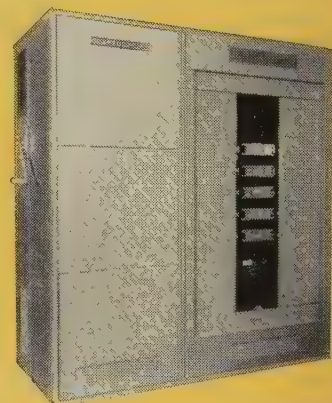
• Voltage Testers



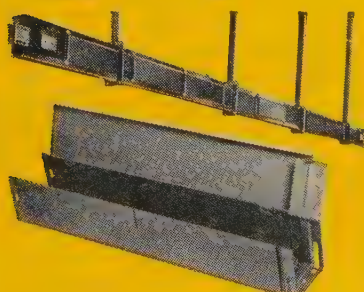
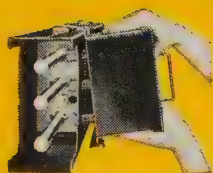
• Fusible and Circuit Breaker Lighting and Power Panelboards



• Power Distribution Switchboards and Switchgear



Wherever Electricity



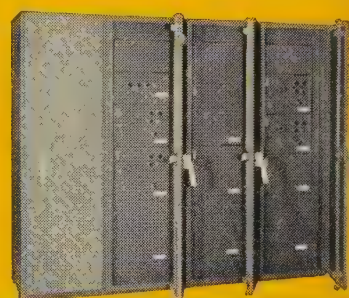
• Busways and Wireways



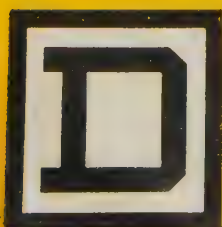
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• Special Purpose Control



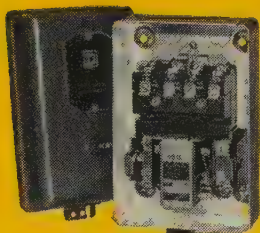
• Control Centers



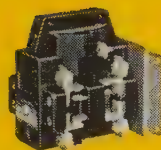
SQUARE D COMPANY



• A.C. Manual and Magnetic Starters



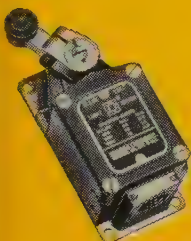
• Drum Switches



• Control Relays



• Timing Relays



• Limit Switches



• Pushbuttons



• Combination Starters



• Manual Compensators

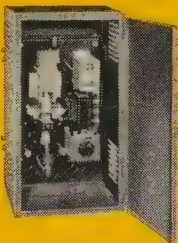


• All Types of Reduced Voltage Starters

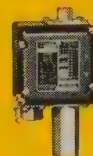


• D.C. Starters

• Electronic and Electro-Magnetic Welder Control



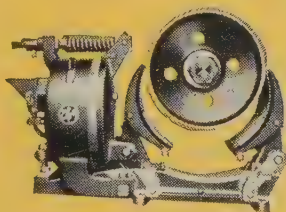
• Float & Pressure Controls for Pumps & Compressors



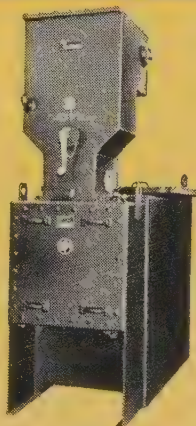
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BOLTMAKER . . .

sulator pins; large rivets; coupling bolts; ball-joint suspension parts; and miscellaneous gear blanks.

Description—The machine uses the Kaufman double extrusion process. The raw material is wire or rod larger than the diameter of the finished fastener. A series of operations reduces the metal to a pitch diameter ready for rolling. Automatic heading, pointing, and roll threading complete the part.

Advantages—Products made by cold forging are said to be superior to those produced by other methods. Moving rather than removing metal improves the product three ways: 1. Cold working improves the grain structure, making the part stronger than the raw material. 2. Grain flow lines are maintained rather than cut. 3. Finish is good since there is no scale.

Since all steps are done by one machine, material handling is reduced, setup time is shortened, and scheduling simplified.

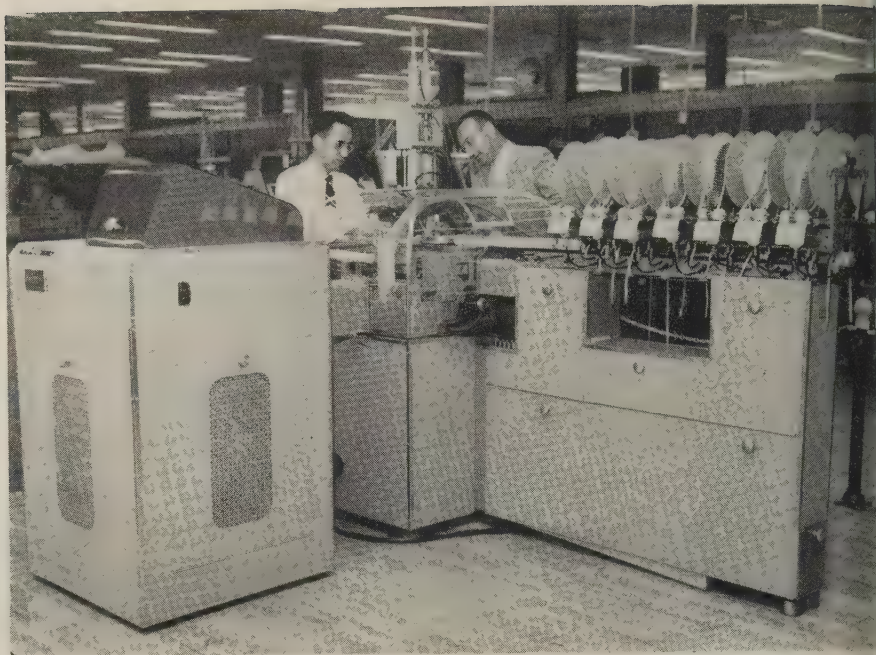
Equipment—The boltmaker has variable-speed electrical controls. They permit the 200-ton machine to operate at speeds between 4 and 40 rpm. Precise control aids especially large upsets.

Design Problems—The machine was constructed by the National Machinery Co., Tiffin, Ohio. It made the first boltmaker used by Cleveland Cap Screw in 1935; since then, several larger ones have been made to handle bolts up to $\frac{3}{4}$ in. in diameter.

National Machinery says it solved several unusual problems in making the machine. Huge, heavy-duty castings for the base were hard to handle. Heat treatment of the thick crankshaft required careful quenching and tempering.

Cleveland Cap Screw says that the new machine makes it the only producer of large, cold formed, hex head cap screws. It cost \$500,000 and more than five years to whip the design and construction problems.

Suggestions—Engineers at the firm expect to penetrate the market for unusual fastener shapes, some of which are illustrated on Page 141 (top). Many such parts are currently made by machining or hot forging. Cold forging is less expensive.



Engineer is looking at the working head of assembly machine. It inserts parts into circuit boards at rate of one per second. Assemblies are used in computers.

Assembly by Punched Card

Electrical resistors, capacitors are stored on masking-tape belts held by reels which feed parts into printed circuit boards. Pattern is controlled or changed by cards

THE machine in the illustration (above) automatically assembles electronic parts on printed circuit panels.

Made by IBM, New York, it is an improvement over older models. Components are arranged or changed through instructions on punched cards. Manual resetting is obsolete.

Purpose—The device is called the the programmed component assembly system. It assembles wiring panels for IBM data processing equipment.

Engineers point out that the machine is ten times faster than manual methods. It also produces a more uniform product.

Printed wiring boards are the latest technique in eliminating bulky wiring of complex electronic devices. They are about the size of post cards. Resistors and other

parts are attached so that the printed wiring connects them.

Size Is Key—To make possible such an operation, all components are made in one of two sizes. They are grouped according to electrical values and mounted on masking tape belts. Cutoff reels which hold belts resemble ammunition drums.

Any number of reels can be accommodated by changing the length of the rack.

Available—IBM built the machine for its own use, but its Special Engineering Products Div. may make such machines for industry.

The proposed market version is expected to cost more than \$100,000. Its extreme simplicity and economy of changeover make it valuable for low production runs of a variety of assemblies.

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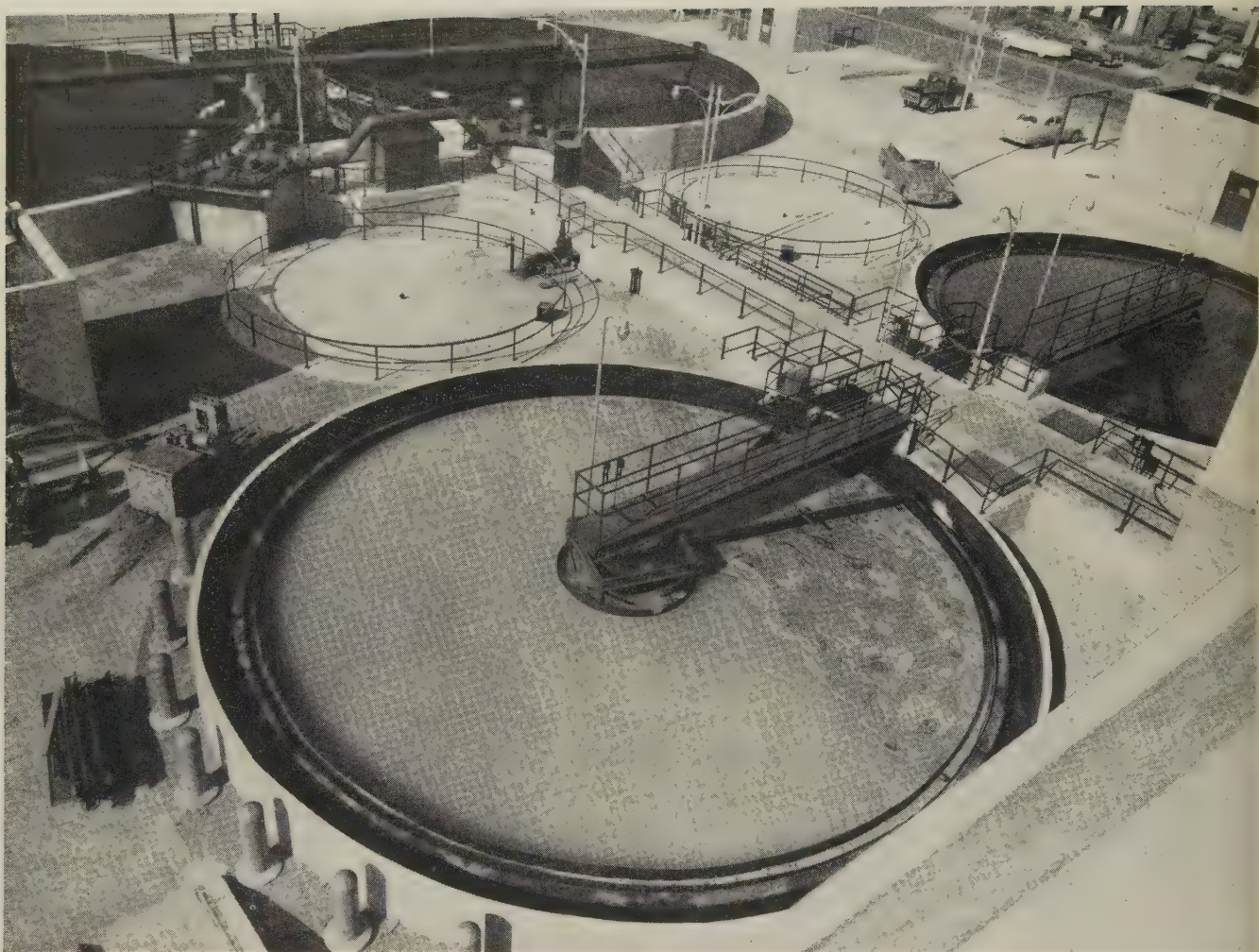
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Raw waste enters one of the holding basins, front, then is mixed in tanks, not shown, and piped to clarifiers, rear. Underground tanks, center, contain salvaged oil

One System Handles Many Wastes

MEMO TO MANAGEMENT

Waste treatment is a legitimate production cost. Aside from causing the loss of useful materials, improper disposal can lead to poor community relations and court action. Here's an example of what can be done: Buick's new treatment system reduces costs by reclaiming oil and using spent acids to treat other wastes. It disposes of wastes gathered from nearly 10 million sq ft of diversified manufacturing plants.

BUICK's new disposal plant at Flint, Mich., handles a variety of wastes from stamping, painting, plating and assembly operations:

- Spray booth residues.
- Pickle acids, HCl, H₂SO₄, and HNO₃.
- Chromic acid from plating and phosphating operations.
- Wastes from nearly 300 cleaning machines.
- Both soluble and insoluble oils.

Details of the system were described at the Twelfth Purdue Industrial Waste Conference, Purdue University, Lafayette, Ind., by R. J. Brink, supervisor, trade waste plant, Buick Motor Div., General Motors Corp.

Size—Tank capacities and pump-

A—SLUDGE & EFFLUENT

Pumps draw off sludge, and oil and scum are skimmed from the top as main body of liquid is purified.

B—OIL RECLAMATION

Floating oil is skimmed from the holding basins and piped to tanks for treatment with steam and sulphuric acid.

C—CHEMICAL ADDITIVES

Feed rates and chemical treatment are determined for each batch of waste.

KEY

- 1. Holding basins.
- 2. Oil storage tanks.
- 3. Primary mixing tanks.
- 4. Primary clarifiers.
- 5. Final clarifiers.
- 6. Sludge settling tanks.
- 7. Dry sludge beds.

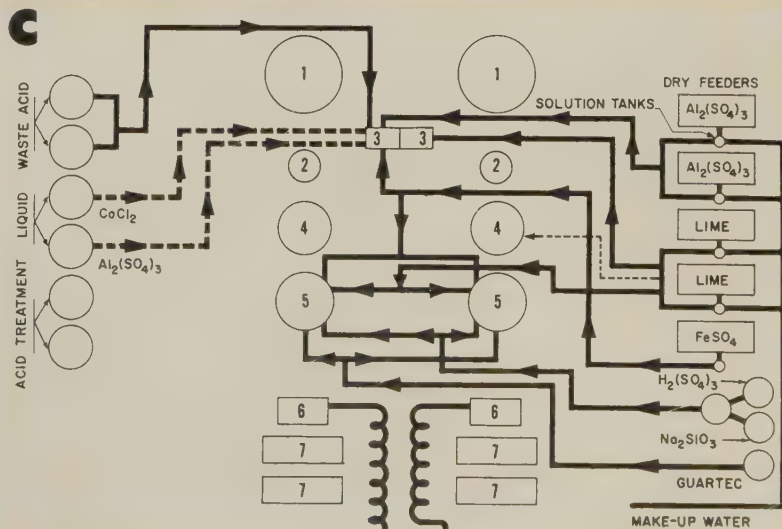
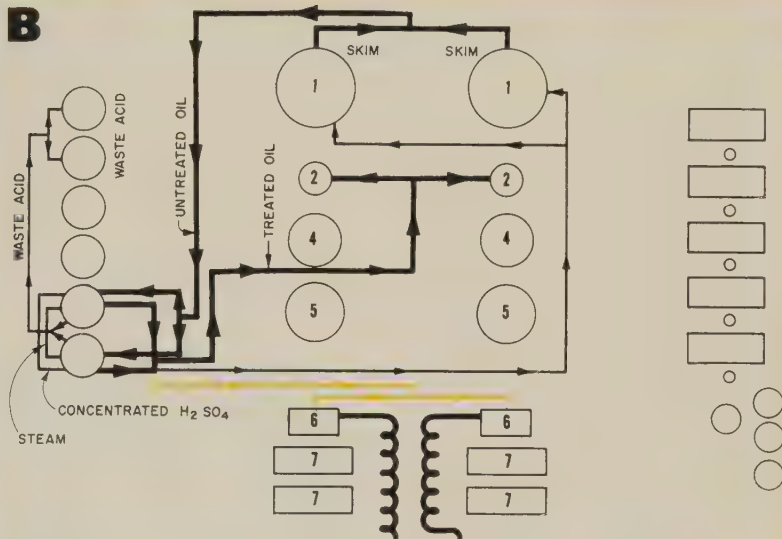
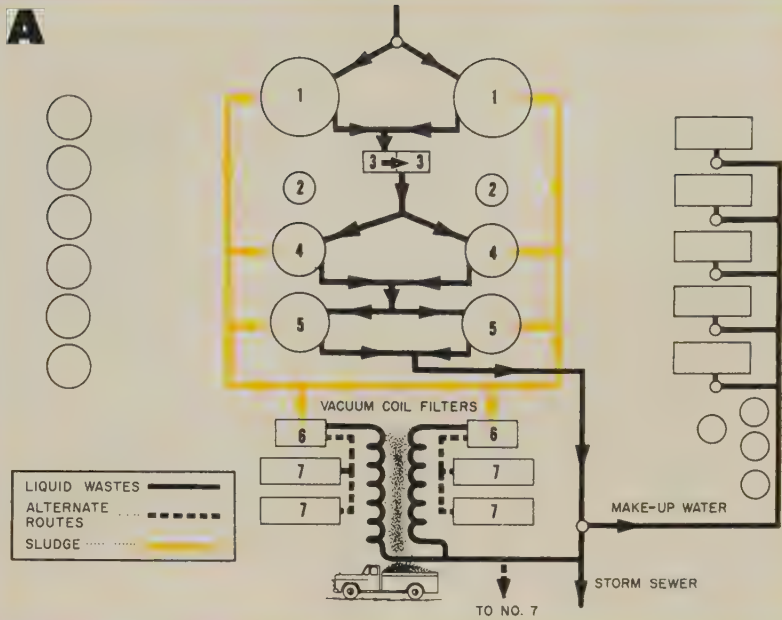
g rates were designed for a peak production of 1 million cars a year. The disposal plant (capacity 1600 pm) treats all industrial wastes except cyanide, which is handled by a separate plant.

Flexibility of the plant enables to handle an increasing load—water consumption per car built as increased nearly 50 per cent about eight years.

A sump system collects plant wastes and relays them to pumping stations via overhead lines. The pumping station then moves the wastes through overhead and buried lines to the treatment plant. All wastes are piped except the pickle acids. They are moved by truck.

Procedure—The flow of wastes, the addition of chemicals, and oil recovery are diagrammed in the charts at right.

Valves direct the flow of oily wastes into one of the two holding basins. When a basin is full, treatment starts, and the wastes





This basin will hold 750,000 gallons of industrial wastes. Processing pumps blend (by recirculation) the tank when it is full

WASTE SYSTEM . . .

are piped to the other basin.

Processing pumps blend the full basin by recirculation. The pumps have a capacity of 2000 gpm and are powered by 50-hp motors.

Samples of the mixture are taken to the laboratory for jar tests to determine the treatment and chemical feed rates. Oil content, alkalinity, and chrome concentration are also determined. The operator controls the processing from a main control panel.

A rotating skimmer blade takes off oil from the holding basin. Scraper blades on the bottom of the tank move the sludge into two small sumps in the center of the tank. From there it is pumped to the sludge settling tanks.

Add Chemicals—Liquid wastes are pumped from the holding basins into the mixing tanks where chemicals for the primary break are added.

Liquid calcium chloride and liquid aluminum sulfate are used when their cost is less than the dry chemicals mixed in the solution tanks.

Waste pickle acids are added at the primary mix tanks. This disposes of the waste acid and at the same time breaks the water soluble oils.

The ferrous iron reduces chrome

from hexavalent to trivalent. When there is not enough waste acid, ferrous sulfate, plus sulfuric acid, is used to reduce the chrome.

Lime is fed into the second chamber of the primary mix tanks

to give better settling in the clarifier unit.

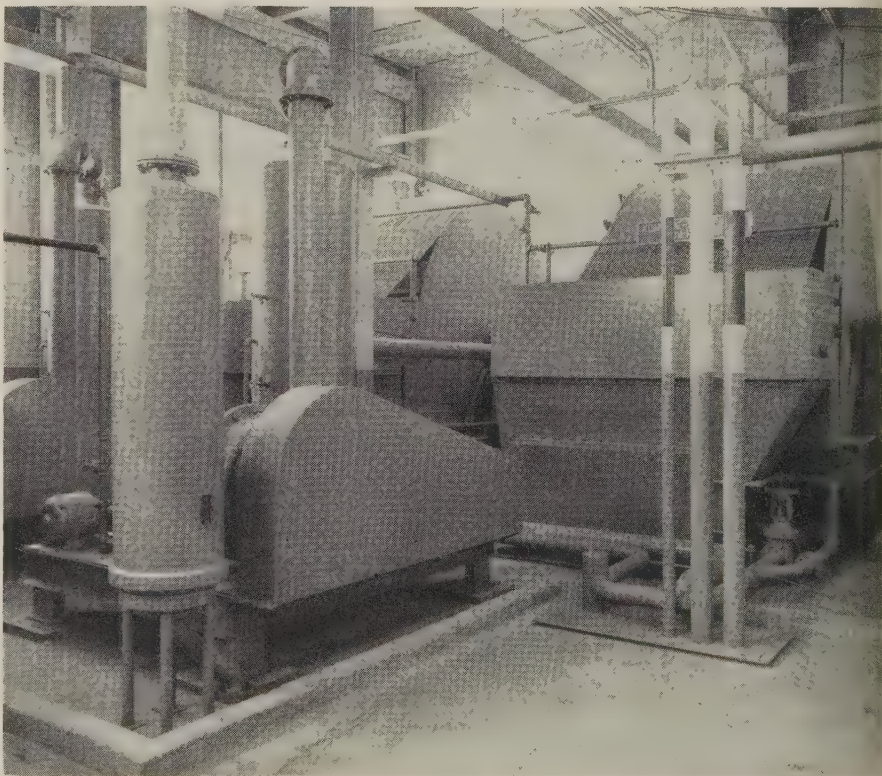
The tanks have a 5-minute retention time at a processing flow rate of 1600 gallons a minute.

Clarifiers—The flow from the primary mix tanks is divided so that half goes to each of the primary clarifiers. Sludge settling out in these units is drawn off at a predetermined rate to the settling tanks.

The solution overflows the primary clarifiers and enters a common line. The flow is divided, then enters the final clarifiers from the bottom. Flocculating materials, such as lime, activated silica, ferrous sulfate, and Guartec (a non-ionic coagulant derived from the Guar bean) are fed into the stream as it comes from the primary clarifiers.

Sludge is drawn off automatically from the final clarifiers to the sludge settling tanks. The effluent from the final clarifiers is pure enough to be used as make-up water or to be discharged to storm sewers.

Handling—Each settling tank is equipped with two chain driven flight scrapers. One pushes sludge to one end of the tank, and the



These vacuum coil filters discharge caked sludge into trucks. Water from the filters is sent to the storm sewer, or to sludge beds

3,000

horsepower

in a single

CLARK CBA-8

balanced/opposed compressor

Now, for the really big applications, Clark introduces the most powerful compressor ever built—the new CBA-8. The ability to handle tremendous horsepower, however, is not the only feature of this new compressor. Being extra heavy and rugged in all respects, it is the perfect choice for those services where extremely high pressures are required such as in the process industries and for high pressure wind tunnel applications.

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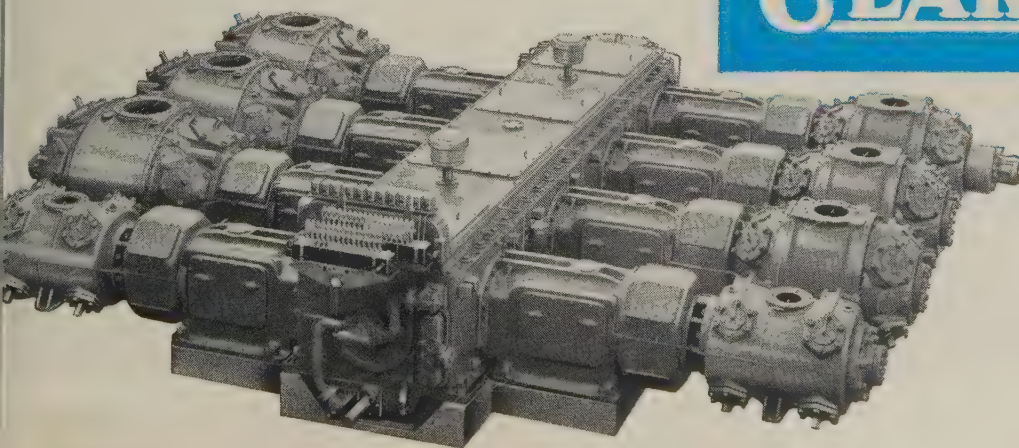
Two new CBA-8 units already have been delivered for a special application. Your Clark representative will gladly give you full details on this new unit.

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balanced / Opposed Compressors



WASTE SYSTEM . . .

other pushes it across and into a sump.

A pipe is mounted on a swivel anchored at one end and near the bottom of each tank. This enables the tank to be decanted at any level. The water or sludge can be pumped to two Komline-Sanderson vacuum coil filters, or, in an emergency, to any of the sludge beds.

Equipment — The holding basins are made of concrete and coated with a Bitumastic cement penetrant. These tanks are 70 ft in diameter, cone shaped on the bottom and hold about 750,000 gallons.

Each of the underground oil storage tanks can hold 100,000 gallons. Gages indicate the amount of oil. The Koroseal-lined tanks are 30 ft in diameter and have a cone-shaped bottom.

The primary mix tanks are 9½-ft square on the inside. An overflow connects the tanks 6 ft from the bottom. Each side has a capacity of 4061 gallons. Walls are lined with Koroseal.

Each of the primary clarifiers will hold 100,000 gallons. These cylindrical concrete tanks are 45 ft in diameter and coated with a

Buick Predicts Flow Rates This Way

Type plant	Gallons of waste per hour per 100 sq ft of manufacturing area
Assembly	1.2
Automatic transmission	1.1
Motor	1.6
Stamping	0.6
Machine shop	0.91
Axle	1.5
Conventional transmission	1.08

Bitumastic cement penetrant. The final clarification units are 50 ft in diameter. Each has a capacity of 200,000 gallons.

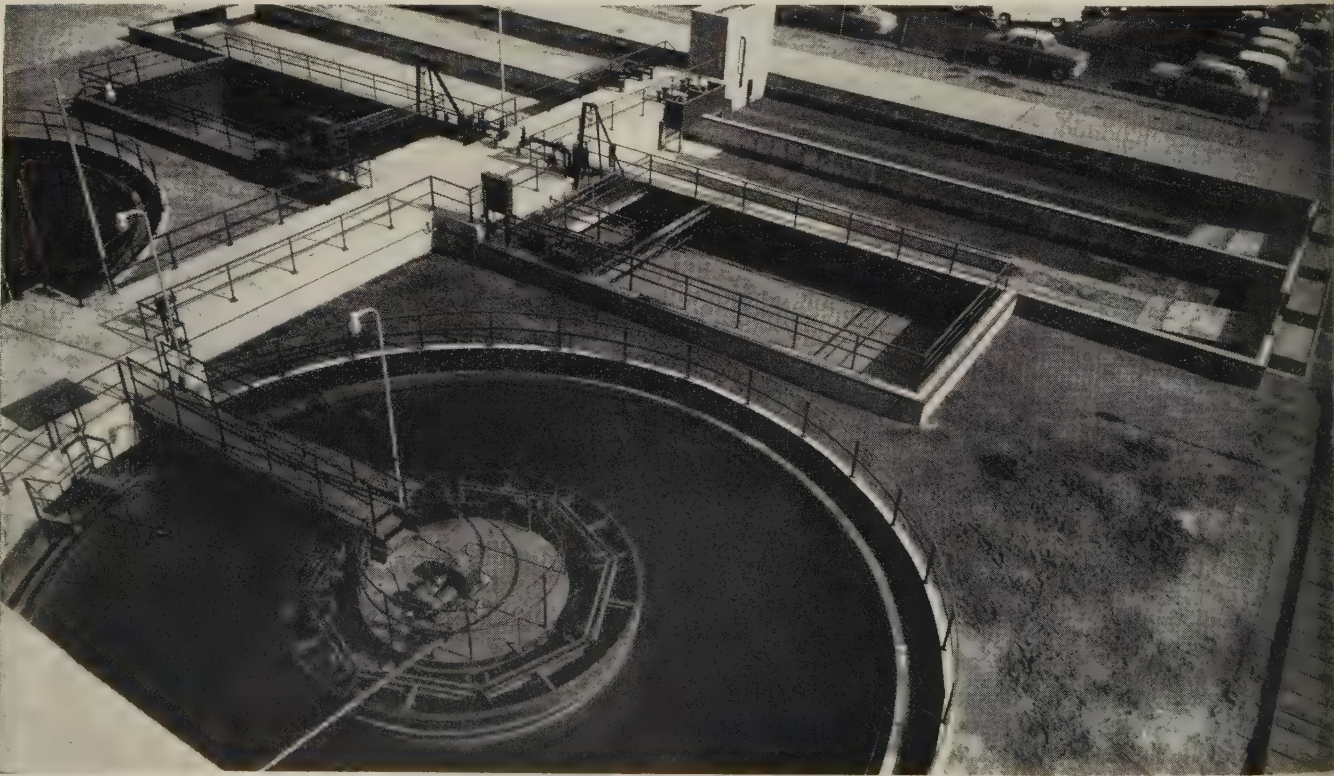
Sludge Handling—Each of the two sludge settling tanks is 20 x 41 ft and has a capacity of 100,000 gallons.

There are four sludge beds, which are 70 ft long, 20 ft wide and 3 ft deep. They are made of 9 in. of coarse gravel, 4 in. of fine gravel, 9 in. of sand, and 3 ft of freeboard.

One end of each drainpipe emerges vertically. It is used as a breather and for flushing out in case of plugging.

Concrete splash pads and metal splash guards are placed where sludge and water are pumped into the beds.

Saves Oil—Oil can be skimmed from the holding basin and sent directly to the oil storage tanks. But it is usually necessary to send it to the oil treatment tanks. Heat applied through steam injection



Sludge is pumped from the final clarifiers to the two settling tanks. From there it goes to the coil filters or one of the four sludge beds

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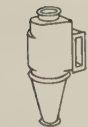
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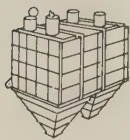


How to tame a dust collection problem

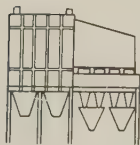
Look for the 'hidden' factors that deliver important *extra efficiency*, like the exclusive Shave-off in Buell Cyclones that harnesses the double-eddy currents to trap an extra percentage of dust. Side-entry of gases, Buell-designed manifolds, proper proportioning, extra-heavy-plate construction provide even more efficiency. Send for the ready reference booklet, "The Collection and Recovery of Industrial Dusts". Dept. 26-I, Buell Engineering Company, Inc., 70 Pine Street, New York 5, N. Y.



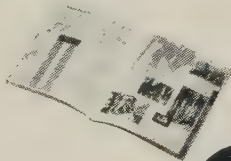
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DUST COLLECTION SYSTEMS

WASTE SYSTEM . . .

sometimes with sulfuric acid, is used to treat the oil so that it can be sold or burned.

The treated oil is pumped to storage tanks. From there it can be loaded into railroad tankers or tank trucks.

Water from the oil treatment tanks is pumped to the holding basins. Sediment from the operation is pumped to one of the sludge settling tanks.

An inverted steel cone is mounted at the bottom outlet of the storage tanks so that any water may be easily separated from the oil.

Skimmings from the clarification units make the oil taken from the raw holding basins unsalable. Waste skimmings are directed to the sludge settling tanks.

Some cleaners used in washing machines give trouble in oil reclamation. A peculiarity in their compounding causes the cleaners to go into the oil layer and take large quantities of water with them. The subsequent floating mass cannot be separated by the system.

Safety—All pumps and motors in the system can be replaced from a reserve stock. All motors and electrical outlets below ground level are explosion-proof.

Most of the equipment and machinery used in processing the waste are controlled from the main panel.

All the sump pumps and equipment controlled by the panel are incorporated into an alarm system. A bell and a flashing light indicate any pump failure, any sump that has reached its emergency high level, or any equipment which has been shut off at the panel or at the machinery itself. The sound and the light cannot be cut off until the operator presses the proper button which indicates that he knows the location of the trouble.

The pH is recorded continuously in both stages of the primary mix tanks. Water from final clarifiers is sampled continuously and automatically. Its pH is also continuously recorded.

• An extra copy of this article is available until supply is exhausted. Write Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

2-Ft Gaging Unit

's being used for inspection
f jet aircraft engine parts.
accuracy is 0.00001 in.

HE Aircraft Gas Turbine Div. of
General Electric Co., Evendale,
Ohio, has a new 12-ft measuring
machine.

Reading directly to 0.00001 in.
with controlled measuring pressure,
was built by Pratt & Whitney
Co. Inc., West Hartford, Conn.

Essentials — Basically, the ma-
chine consists of a master bar,
measuring head, and Electrolimit
tailstock, all mounted on a rigid
bed.

The measuring bar has 144 stain-
less steel buttons. Each carries a
hairline that is exactly 1 in. from
the adjacent buttons. The hair-
line is visible through an attached
5-power microscope and is used
for setting each inch of length on
the part to be inspected.



MEASURING MACHINE

... can handle parts 144 in. long

Operation — Measurements are
taken from a vernier on the head-
stock that reads to 0.00001 in. The
measuring screw has 1 in. of travel.
Pressure control through the
tailstock is important in obtaining
precise readings. The tailstock is
graduated to provide 1 to 2½-lb
pressure.

The measuring machine is ready
for use when the head is properly
positioned to the hairline on the
master bar and after the tailstock
adjusted to the required pres-
sure.



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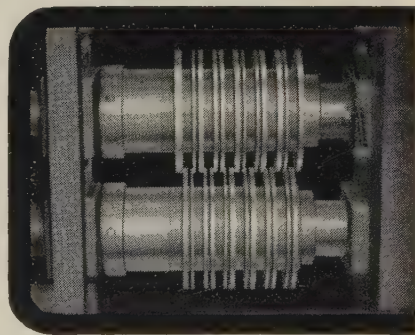


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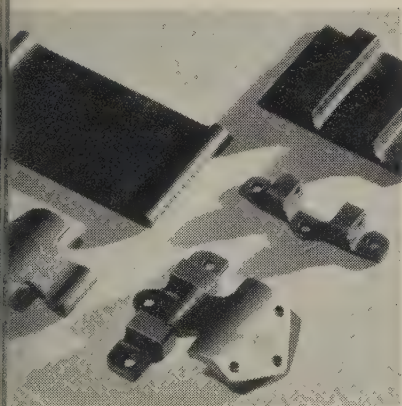
with Republic Cold Finished Steel Bars

Whatever your machined steel parts production target—greater feeds and speeds, longer tool life, better surface finish, higher strength, increased over-all economy—you'll score more bull's-eyes by using consistent, quality Republic Cold Finished Steel Bars.

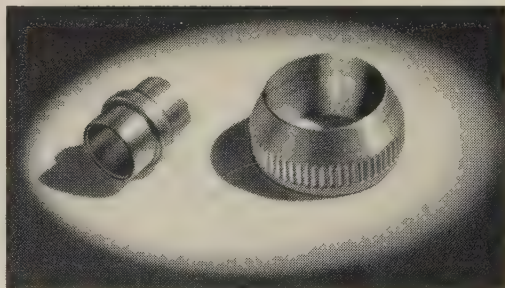
Take the high-accuracy, .22-caliber target pistol shown on the opposite page, for example. Made by the High Standard Manufacturing Corporation, Hamden, Connecticut, it represents the ultimate in target pistol performance, winning honors in championship matches throughout the world. High Standard can afford no less than the best in craftsmanship and materials to protect their enviable reputation. Republic Cold Finished Steel Bars used for barrel stock in these pistols and other High Standard firearms, meet their most exacting specifications with flying colors.

The many advantages of Republic Cold Finished Bars have helped machined parts manufacturers in every field to zero-in on tough production problems. Their bright, smooth finish, plus extreme size-and-shape accuracy, enable machining operations to be held to a minimum—or, in some cases, to be eliminated entirely. In addition, the cold drawing process increases the machinability and physical properties of any given hot rolled analysis. Higher ultimate strength, yield point, and hardness provide product-design-and-performance benefits.

It will pay you to get the complete story on Republic Cold Finished Steel Bars in relation to your production targets. Simply call your local Republic representative or steel warehouse. Mail coupon for literature.

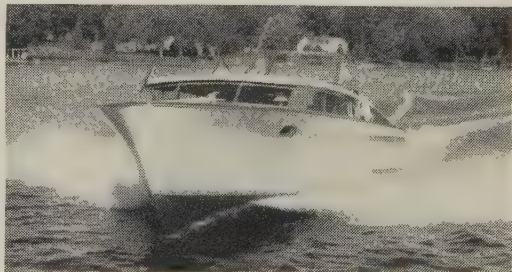


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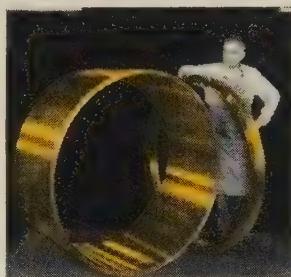
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Army Evaluates Steels

Results of five years of research on the extent cold worked steels might replace the more strategic heat treated alloy steels are presented in *A Handbook on the Properties of Cold Worked Steels* (PB 121662, 113 pages, \$3.).

Tables present the important engineering properties of the material and the factors to be considered in design selection.

Chapters are devoted to the mechanism of cold working, composition effects, residual stresses, directionality, benefits and limitations, costs, and applications.

Literature Survey on Leaded Steels (PB 111917, 38 pages, \$1.) is an evaluation of published information on the manufacture, fabrication, and properties of leaded steels. The volume also discusses the history and technological aspects of leaded steel, machinability, and applications.

Both books can be ordered from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.

How To Finish Steels

Can prefinishing of steel be done more economically in the steel mill or in the fabricating plant? Can a mill strip grind carbon steel and sell it as polished stock at a profit? Can a mill achieve a No. 3 quality through a slight reduction on bright rolls, and sell it without prohibitive extras?

Those are among the questions discussed in a motion picture produced by Minnesota Mining & Mfg. Co., St. Paul. It shows mill and fabricator practices in finishing stainless and carbon steel.

The color film, "A Challenge for Steel," is shown to production, sales, and executive management personnel of steel mills and fabricating plants as part of a presentation dealing with coated abrasives and their application to production line problems.

In-plant meetings include a review of coated abrasive components, a technical presentation of factors affecting their use, and a discussion period. Among the finishing methods shown in the film are those for wide sheet grinding and polishing, strip scouring, and coil grinding.

Horizontal Milling Machine Has 34 Speeds

The No. 5 is a boring, drilling, and milling machine with a spindle 5 in. in diameter.

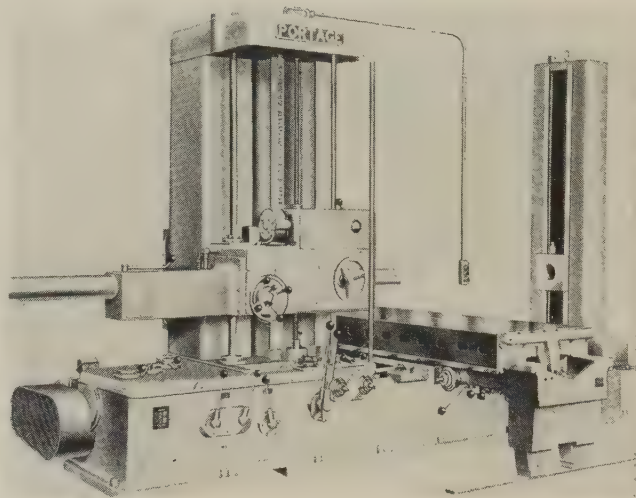
The machine has a vertical head travel of 48 in. The cross travel of the table on the saddle is 60 in. The working surface of the table is 36 x 72 in.

Speeds range from 7 to 1000 rpm. With the tail block mounted, the longitudinal travel of the saddle is 52 in. Maximum distance of the spindle sleeve to the tail block is 90 in.

The headstock has an independent, motor-driven pump that insures a constant flow of oil to bearings and gears. A fan forces a flow of air through the headstock over ventilating ribs to dissipate heat from the spindle sleeve bearing.

Optional ranges and sizes have 36, 60, or 72 in. of vertical head travel, and table working surfaces from 36 x 72 in. to 48 x 96 in. Maximum distance of the spindle sleeve to the tail block is 138 in.

Accessories include precision measuring devices for head and table movement, precision verniers, angular milling attachment, facing heads, auxiliary tables,



rotary tables, and angle plates. Write: Portage Machine Co., 1049 Sweitzer Ave., Akron 11, Ohio. Phone: Blackstone 3-7191

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This line of double chamber furnaces is of the recuperatory type. Gas, oil, or combination firing may be used.

The burners are mounted in the arch or roof and point down into the melting and holding chambers. Ports for the burners are located over and are integral with main burners so they cannot become clogged with dross.

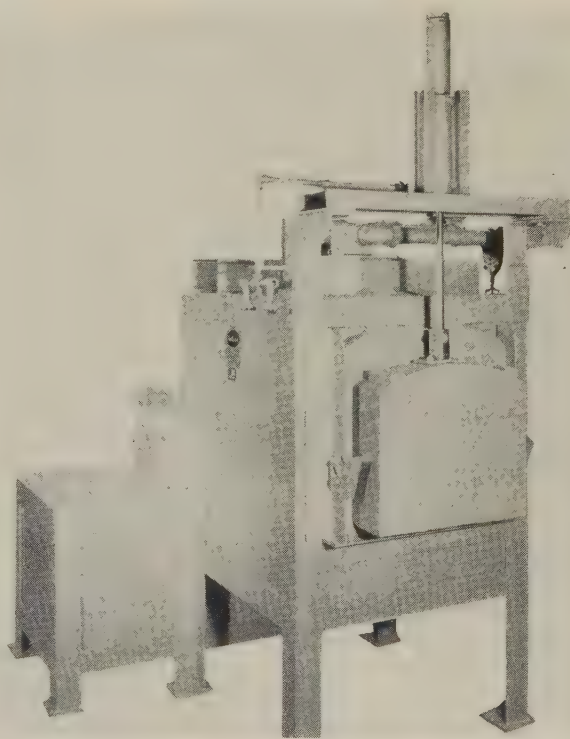
High melting rates and uniform pouring temperatures are provided for diecasting, permanent mold, and sand casting work. Hourly capacities range from 300 to 2000 lb.

Because the furnaces can be provided with end, single side, or double side dipouts, they fit into a variety of production lines. Sixteen combinations of sizes and dipout arrangements are available.

Moisture cannot enter the molten metal in these furnaces because it is driven off while the metal is melting on the dry hearth. The moisture mixes with the products of combustion and leaves the furnace through the flue.

Hydrogen gas cannot get into the molten metal to produce porosity (the design prevents overheating). The arch on the furnaces is separate from the rest of the unit. This design makes it easier and less costly to repair refractory, furnace walls, and hearth.

Aluminum melts quickly on the sloping hearth because of the top-firing design. It flows to the holding compartment and its temperature is controlled by instruments.



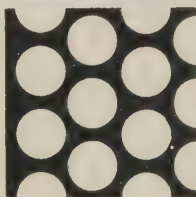
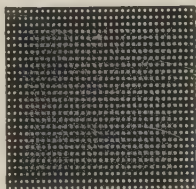
Oxide inclusions, normally found in scrap metal, are cleaned from the furnace by raking the hearth at the end of each day. Write: Industrial Furnace Div., Eclipse Fuel Engineering Co., Rockford, Ill. Phone: 8-3751

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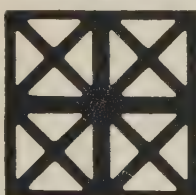
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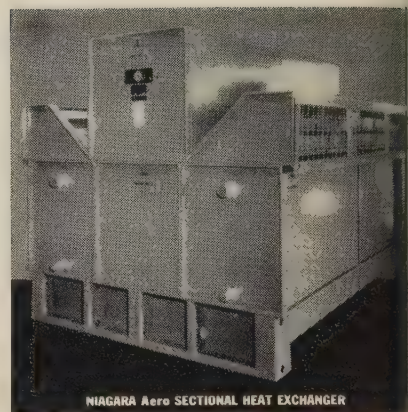
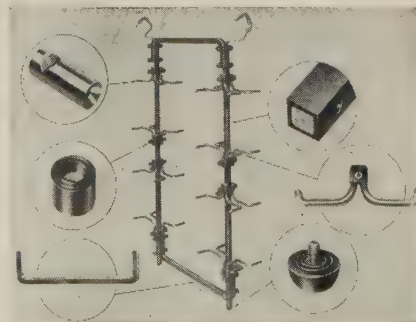
The pipe comes in 20 and 30 ft lengths of 2, 3, and 4-in. diameters. It is unaffected by most acids and alkalis as well as salt, oil, water, and alcohol solutions. Write: Plastic Div., B. F. Goodrich Industrial Products Co., Marietta, Ohio. Phone: Frontier 3-6611

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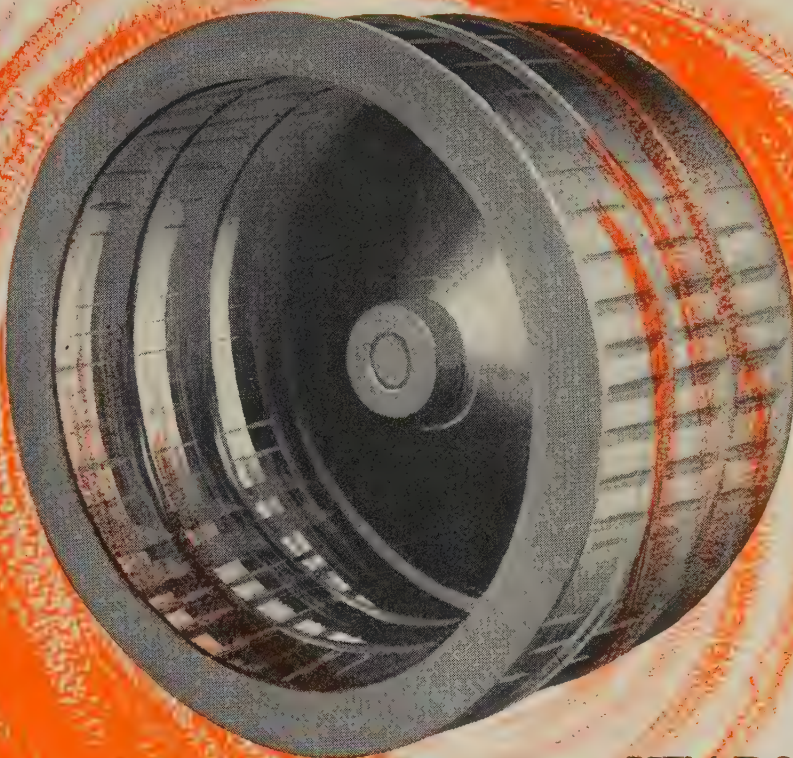
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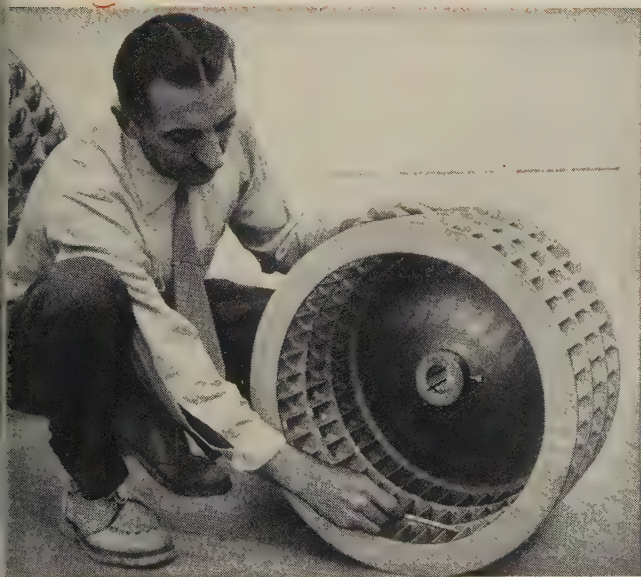
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HAYNES

ALLOYS

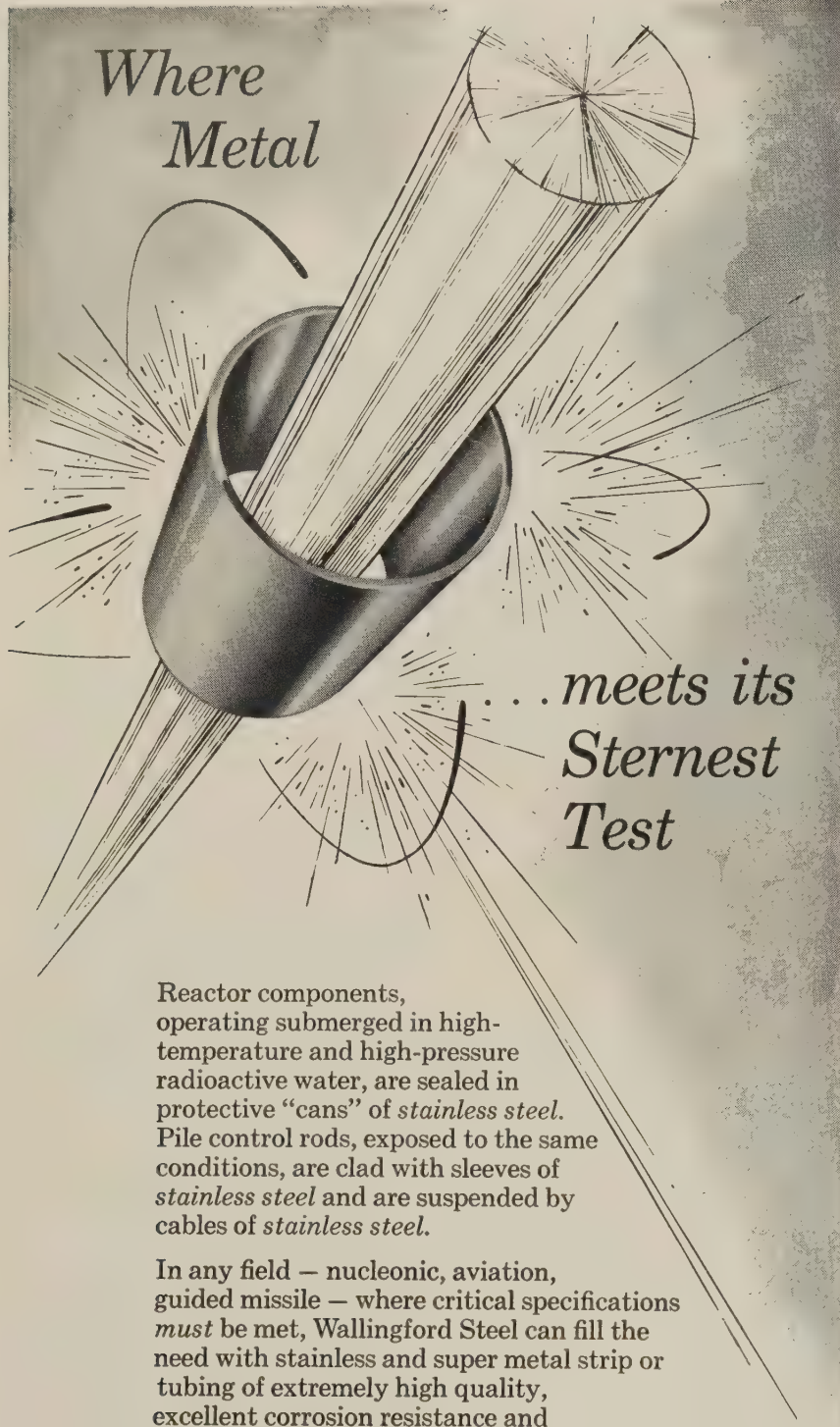
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Division of Union Carbide Corporation
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Test

Reactor components, operating submerged in high-temperature and high-pressure radioactive water, are sealed in protective "cans" of *stainless steel*. Pile control rods, exposed to the same conditions, are clad with sleeves of *stainless steel* and are suspended by cables of *stainless steel*.

In any field — nucleonic, aviation, guided missile — where critical specifications *must* be met, Wallingford Steel can fill the need with stainless and super metal strip or tubing of extremely high quality, excellent corrosion resistance and low heat transfer rates.

Whether your need is quality stainless steel, or super metals with special characteristics, Wallingford Steel can help you. Write today.



THE
**WALLINGFORD
STEEL CO.**
WALLINGFORD, CONN., U.S.A.

COLD ROLLED STRIP: *Super Metals, Stainless, Alloy*
WELDED TUBES AND PIPE: *Super Metals, Stainless*

NEW PRODUCTS and equipment

can be replaced if necessary.

When models are changed, only new holding members for the new parts to be plated are needed. Write: Plating Equipment Div. Automotive Rubber Co. Inc., 1255 Beech Rd., Detroit 39, Mich. Phone: Kenwood 2-3000

Sheet Fanner

Models SF 10, 20, 30, and 40 are heavy duty units for the automatic separation of sheet or strip stock fed to presses, brakes, and other tools.



The units consist of Alnico V permanent magnets enclosed in a protecting cover. When placed adjacent to a stockpile of tin plate sheets, or strip, the magnetic field induces like polarity in the stock, causing each to repel the other and to tend to rise in the air and maintain a definite separation.

The protective shell of the unit is made of aluminum. Wear strips of stainless steel on the face minimize frictional resistance to the elevation of stock and prevent scoring or tearing of the pieces.

A poured epoxy resin is used to fasten the magnetic castings. Write: Eriez Mfg. Co., Erie 6, Pa. Phone: 4-0133

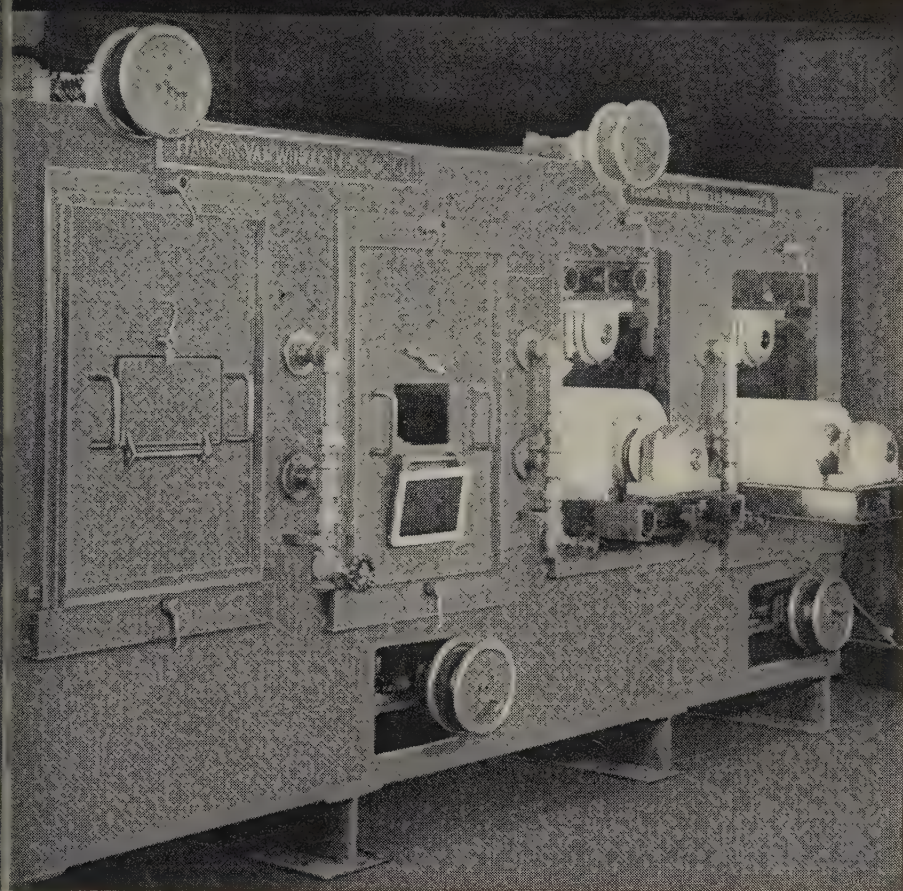
Embossing Presses

The line of Series 90 presses has models with capacities of 150 to 1000 tons. The presses are used in mass production coining, sizing, and embossing operations.

A combination air friction clutch and brake is located on the crankshaft within the main gear drive to increase single cycle efficiency.

The high press speeds give a greater velocity of impact which

CONTINUOUS STRIP AND SHEET METAL PROCESSORS



cut cleaning
time
to a fraction
with this
automatic
H-VW-M
SCRUBBER
UNIT

H-VW-M Scrubber Unit. Brush units are pulled out for inspection. In a matter of minutes they could be replaced, if necessary with new brushes.

...and no down time either! Brushes are replaced easily while unit is in operation!

H-VW-M Scrubber Units—which adapt to fit into any system—are equipped with an exclusive, patented device that permits replacement of brushes *while the unit is running*. Just turn a few bolts, slide worn brush out, and insert replacement. Not a moment's production time is lost!

Add the advantages of this remarkable new feature to the enormous savings you'll realize in cleaning, reworking and inspection time, and you'll see why the rugged, efficient H-VW-M Scrubber Unit has no equal.

Ⓢ 3149

Get more facts about H-VW-M Scrubbers, with their exclusive easy-brush-replacement feature, by writing today for Bulletin HB-100.

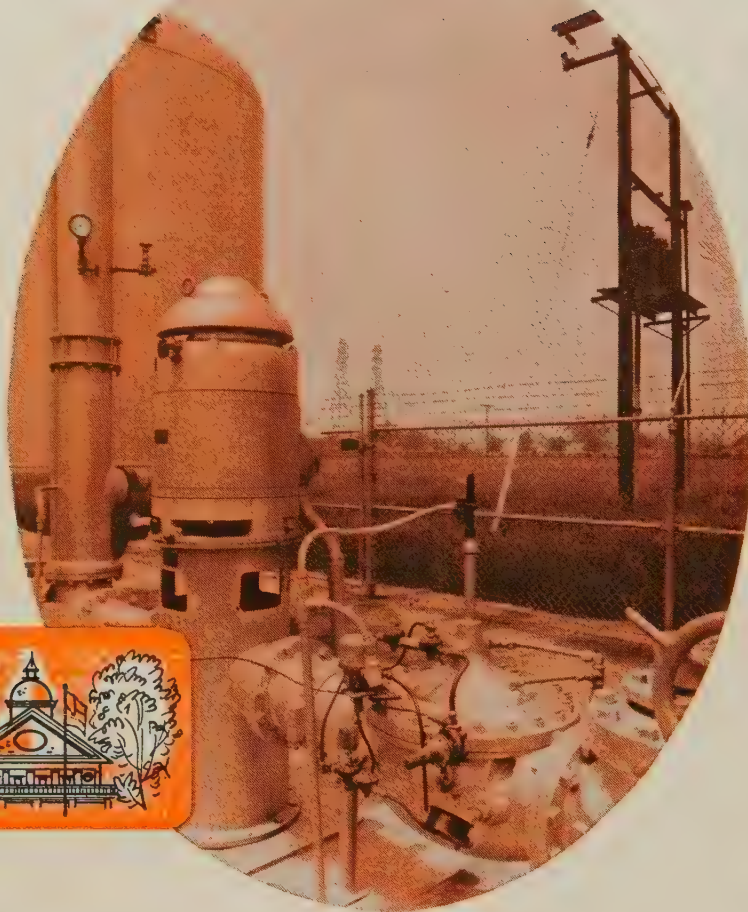
Hanson-Van Winkle-Munning Co.,
Matawan, New Jersey. Offices in principal cities.



H-VW-M

PLATEMANSHIP—Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

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Verti-Line[®]

BOOSTER PUMPS

in

WATER SYSTEM

This Suction-Cased Booster Pump is one of two Verti-Line units maintaining pressure in a large water system.

It is a 60 HP pump, handling 1,000 GPM against 170 feet head. Installed in August 1953, it has proven highly satisfactory in performance—and has cut maintenance expense to the bone.

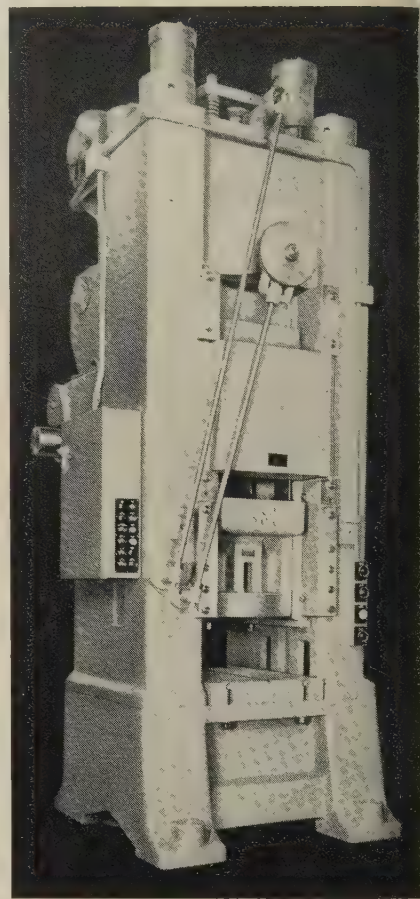
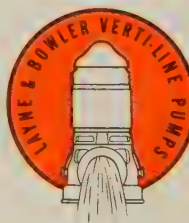
Over 100,000 satisfied vertical pump users agree there's no pump like Verti-Line for low first cost, economical operation, and negligible maintenance.

Send for new brochure
"PUMPS FOR SALE"
Ask for Bulletin J-97

IF YOUR NEEDS INCLUDE BOOSTER PUMPS, IT WILL PAY YOU TO INVESTIGATE VERTI-LINE BEFORE YOU BUY.

Verti-Line Pumps are exclusive products of

LAYNE & BOWLER PUMP COMPANY
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2943 VAIL AVENUE • LOS ANGELES 22, CALIFORNIA



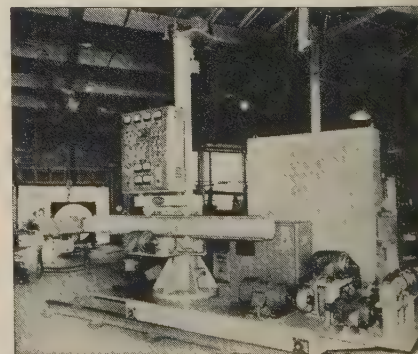
tends to increase the flow of metal in cavity type dies or sizing operations.

A recirculating oil lubrication system supplies oil under pressure to instantly replenish oil film on all wear surfaces after every stroke. Write: Minster Machine Co., Minster, Ohio.

Welding Manipulator

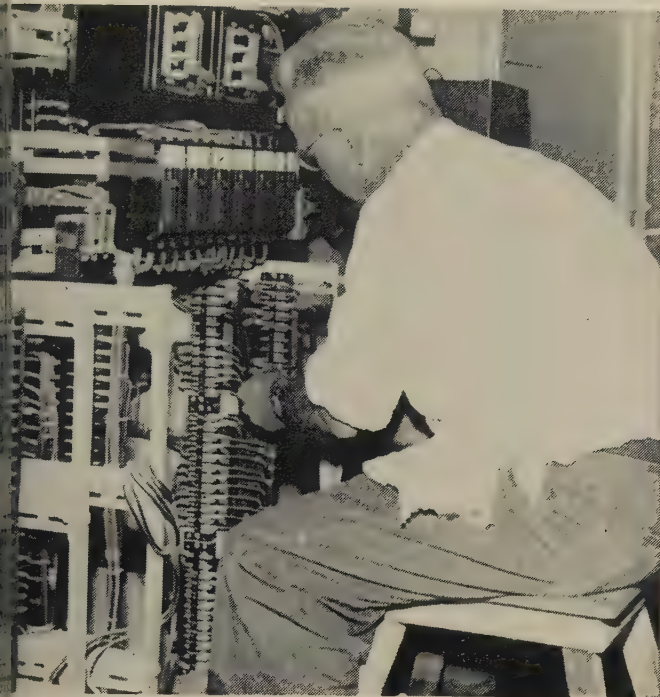
This ram-type manipulator has twin heads. They can be controlled independently or simultaneously.

Ram travel speeds (from 5 to 100 ipm) are electronically controlled. The carriage has three



STEEL

Whatever you want in control cable—Anaconda has it



RELIABILITY. Anaconda's Type ANW-rubber-insulated control cable is a high-quality product which features unusual heat resistance. It is also highly resistant to attack by moisture, acids, alkalies and chemicals. Individual conductor covering and over-all jacket of neoprene.



NE-RESISTANCE. For station control applications where ozone conditions prevail, Anaconda offers a special low-voltage butyl-insulated cable. This control cable not only resists ozone, but individual conductor covering and over-all jacket of neoprene provide maximum insulation against moisture and mechanical injury.

Permanent Full Color Coding on rubber cables, by means of Anaconda's rubber-base coating, assures quick and positive identification. Coding by surface printing, which conforms to IPCEA standards, also available. On thermoplastic cables, full color coding with pigmented insulation and surface printed coding are likewise offered. For information on any of Anaconda's Control Cables—including cables engineered for more specialized control requirements—see your nearest Anaconda distributor or the Man from Anaconda. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.



MULTIPLE USE. Anaconda thermoplastic control cables can be installed aerially, in conduit, underground in ducts—or buried directly in the earth. They are available with either polyethylene (600 or 1000 volts) or Densheath* vinyl resin (600 volts) insulation and Densheath over-all jacket. Also with Densheath conductor covers on request.



SPACE-SAVER. You can install a 12-conductor cable in conduit now carrying a 6 or 7—with Anaconda Type PND† Control Cable. Individual conductor coverings of moisture-, oil- and gasoline-resistant nylon. Over-all Densheath jacket. Designed for general-purpose control requirements where space is a limiting factor.

SEE THE MAN FROM **ANACONDA**[®]
FOR CONTROL CABLE

*Reg. U.S. Pat. Off. 578
*Trademark

VALVOLINE TECTYL RUST PREVENTIVES

SAVES
MONEY
EVERY MONTH



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APPLY
AND REMOVE



PROTECTS
AGAINST RUST
ENROUTE



Yes...

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Preventives save money,
time and worry.

SEND CONVENIENT COUPON TODAY
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TECTYL RUST PREVENTIVES
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(Div. of Ashland Oil & Refining Company)
FREEDOM, PENNSYLVANIA

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Please rush my copy of your newest booklet
entitled, "The Key to Rust Prevention," which
tells about the problems of rust, cleaning my
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NEW PRODUCTS and equipment

forward speed ranges and a rapid
traverse (300 ipm).

Column and ram rotate 360 de-
grees within the base and may be
locked at any position. Write:
C. B. Herrick Mfg. Corp., 2000
Center St., Cleveland 13, Ohio.
Phone: Cherry 1-6185

Contour Polishing

This mushroom shaped, molded
rubber pad and coated abrasive
discs combine to do grinding or
polishing of small radiuses or dif-
ficult contours.

Swirl marks and gouges are vir-
tually eliminated, so that the us-
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often can be eliminated.



No center nut is used to fasten
the discs to the pad. Instead, the
discs are held by a special ad-
hesive packaged in tube appli-
cators.

The discs are made with an
aluminum oxide abrasive with an
all-resin bond. Grits: 120-X,
80-X, 50-X. Write: Behr-Man-
ning Co., division of Norton Co.,
Troy, N. Y. Phone: Arsenal 3-0100

Self-Locking Bolt

The Nylok bolt locks wherever
wrenching is stopped. It is vibra-
tion-proof, liquid tight and adjust-
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A nylon plug in the side of the
bolt wedges opposite mating
threads together, and locks whether
or not the bolt has been seated.

When properly seated, the nylon

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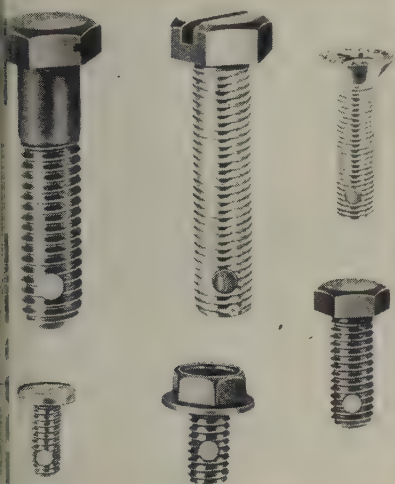
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g blocks fluid flow around the
lix of the threads. The plug is
sistant to moisture and ordinary
vents. It provides a permanent
al.

The bolt can be backed off and
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mage to the threads, seating sur-
ces, or holding power.

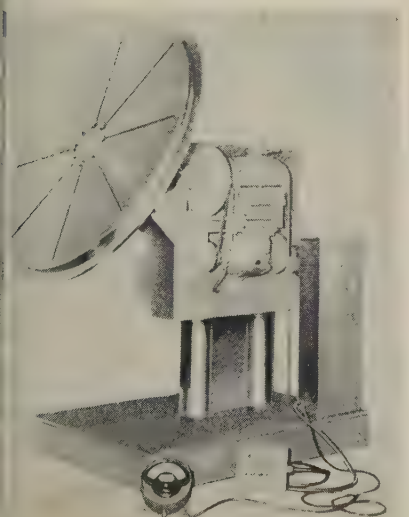
Available sizes: No. 1 to 1 in.
am. Write: Bolt & Chain Div.,
ublic Steel Corp., 1970 Carter
d., Cleveland 13, Ohio. Phone:
ower 1-7500

Titanium Positioner

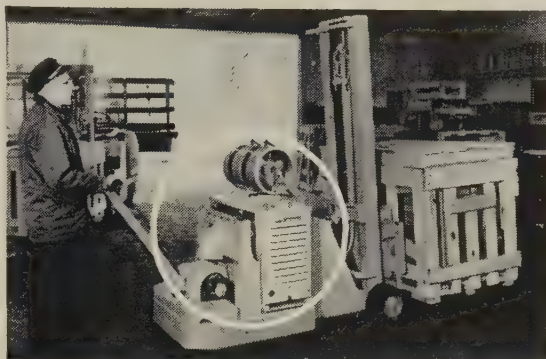
Model 21TS is an automatic po-
sitioner used with production pro-
cesses for welding titanium.

A 64-in. diameter seal plate al-
ws a plastic gastight dome to be
aced over the table and work-
ce.

Load capacity is 5000 lb with the



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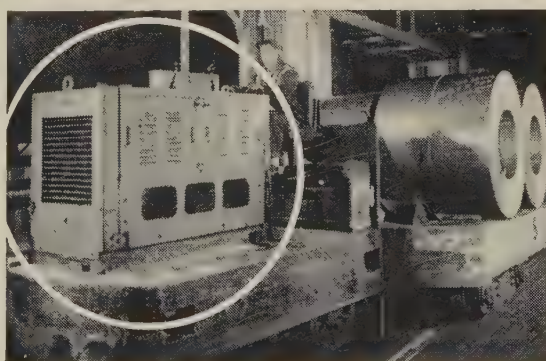
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Ready-Power gas-electric
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materials handling trucks
continuous, full power all
the time. Slowdowns due to
power fatigue are eliminated.
The simple, all-electric con-
trol and live response make
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Energize Lift Magnets on Your Electric Trucks

In the application shown at
the left, the Ready-Power
unit not only powers the
truck, but also energizes the
lift magnet for handling
scrap metal. Ready-Power
units are removable for shop
adjustment while a spare
keeps trucks working.



Get Diesel Electric for Lowest Ton-Mile Costs

Take a tip from the owners
of industry's biggest trucks
... power them with Ready-
Power diesel-electric for
maximum stamina, dependa-
bility, and lowest operating
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Your Truck is No Better than its Power . . . Write for Information
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READY-POWER

The **READY-POWER Co.**, 3824 GRAND RIVER AVE., DETROIT 8, MICH.

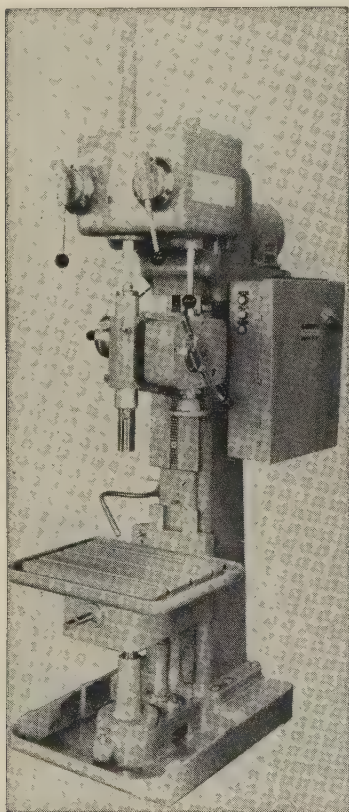
*Manufacturers of Gas and Diesel Engine-Driven Generators and Air Con-
ditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks*

NEW PRODUCTS and equipment

center of gravity 6 in. above the table and 4 in. offcenter. Rotation torque: 20,000 in.-lb. *Write:* Aronson Machine Co., Arcade, N. Y.

Tapping Machine

Model N is an upright drilling and tapping unit with a 21-in. swing. It is made in box and round column types in single spindle models and gang drills.

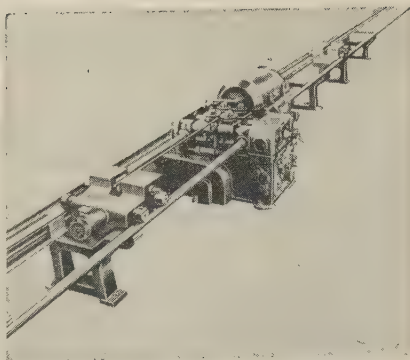


Unlimited feed rates are possible, and standard geared tap leads (8 to 50 pitch) are provided. *Write:* Cleereman Machine Tool Corp., 555 W. Washington Blvd., Chicago 6, Ill. *Phone:* Dearborn 2-5566

Bar Turning Machine

This centerless machine changes over from rough to finish turning simply by changing cutter heads. It turns ferrous and nonferrous bars, including titanium and uranium.

Quality tolerances are ± 0.00025 in. and maximum limit of diameter variation is ± 0.001 in. on a 20-ft



length of precision turned bars. *Write:* Sutton Engineering Co., First National Bank Bldg., Pittsburgh 22, Pa. *Phone:* Grant 1-8077

Fractional Motors

The Form G line of motors is suited for severe applications. The single and three-phase motors have ratings of 1/6 to 3/4 hp and speeds of 1140, 1725, and 3450 rpm.

Stator windings are protected by special insulation and double varnish impregnation. The motors are totally enclosed, and have corrosion resistant finish on both internal and external surfaces.

Other features: Base welded to the stator shell, stainless steel shaft, cast iron end shields, nonventilated construction. *Write:* General Purpose Motor Dept., General Electric Co., Schenectady 5, N. Y. *Phone:* Franklin 4-2211

Automatic Grease Cup

Burned out machinery from too little grease or damaged bearing seals and equipment from too much grease are eliminated by the Visi-ball.

The heart of the grease cup is a neoprene disc which inflates into a ball holding up to 2 ounces of grease. It is filled with a standard grease gun through a fitting on the side of the chrome plated zinc housing.

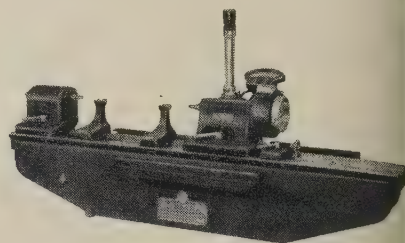
A clear lucite plastic cylinder protects the neoprene ball and enables the maintenance man to see the ball as it fills with grease.

The ball deflates as the bearing uses grease. It is not necessary to refill the cup until the neoprene disc returns to the deflated position.

The compression of the neoprene ball and the vacuum created by the

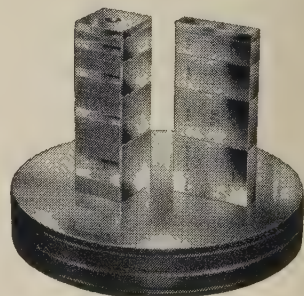
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Basic Equipment for Higher Precision

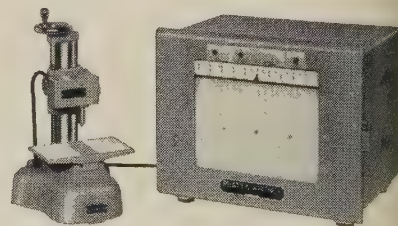


P & W STANDARD MEASURING MACHINE

... is used throughout industry to measure gages, tools and finished products for diameter, length, roundness, straightness, parallelism and taper direct to .00001" with controlled measuring pressure.

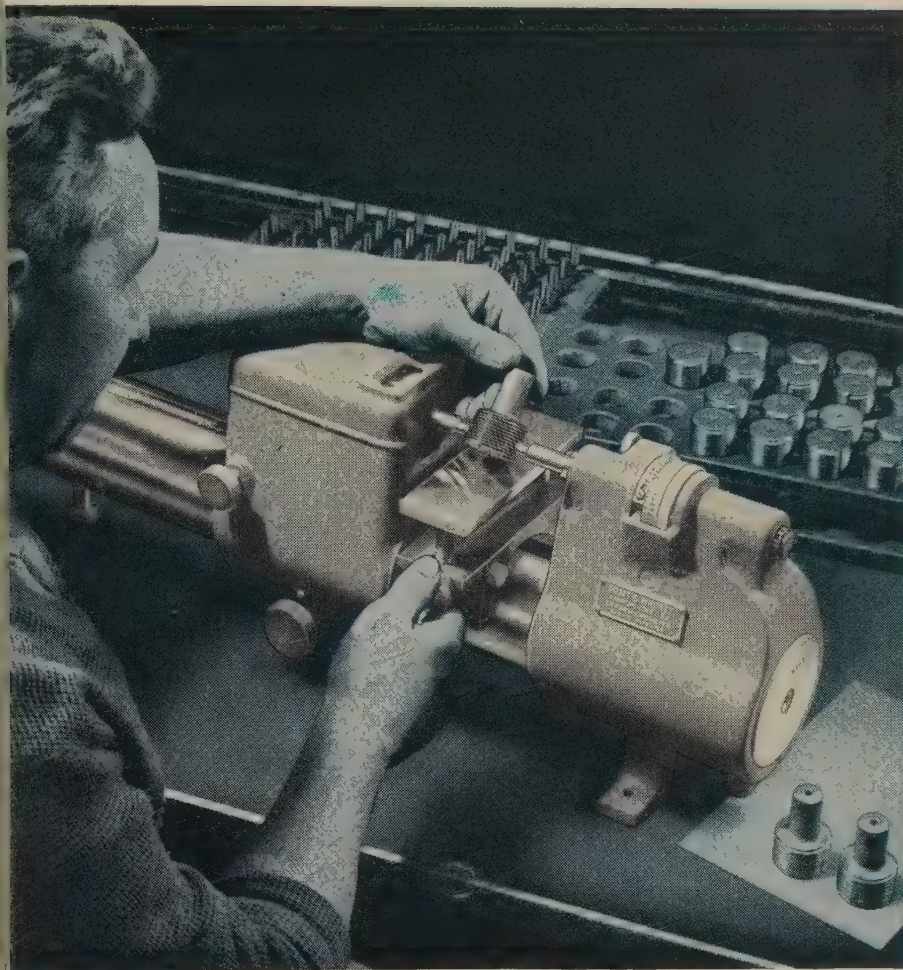


P & W PRECISION GAGE BLOCKS ... are the basic standards of precision in thousands of plants. Guaranteed for size, parallelism and flatness within a few millionths of an inch. HOKE Blocks (square type) and USA Blocks (rectangular type) are available in steel or solid carbide.

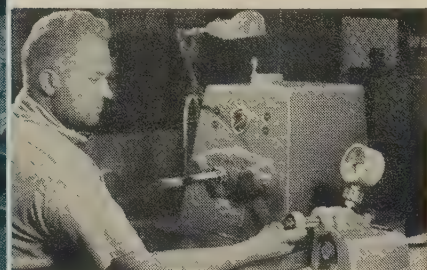


P & W ELECTROLIMIT MILLIONTH COMPARATOR

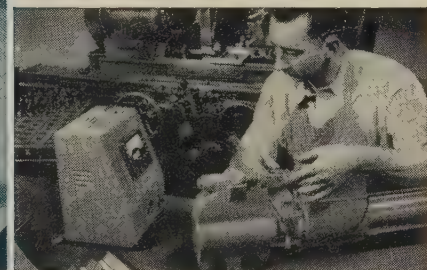
... was developed by Pratt & Whitney for checking Precision Gage Blocks to a millionth of an inch. An essential item of basic measuring equipment for every plant that must establish and maintain truly high master standards of accuracy.



ELECTROLIMIT COMPARATORS . . . for the ultimate in gaging accuracy. Magnifications up to 110,000 times insure accurate indication of smallest errors.



AIR-O-LIMIT COMPARATORS . . . are extremely versatile, check a wide range of products. Readily engineered to your specific requirements.



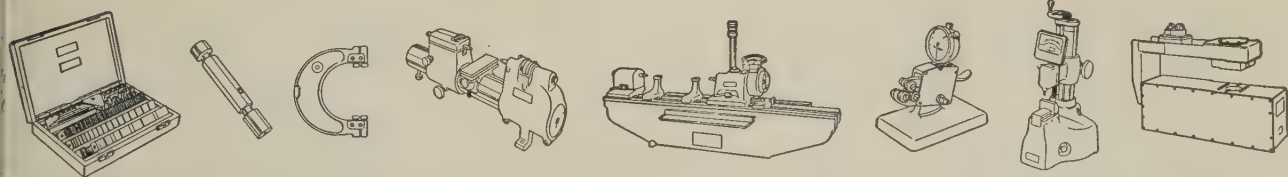
ELECTROLIMIT SUPERMICROMETER . . . reads direct to .00002" when used as a comparator. Tells operator at a glance exactly how much a part is over or under the required dimension

SUPERMICROMETER . . . reads directly to .0001" (.001 mm, if metric). Controlled measuring pressure eliminates operator's errors. Ideal for daily use at machine or on inspection bench.

Improve Your Quality and Reduce Your Inspection Costs

PRATT & WHITNEY GAGES AND COMPARATORS . . . are available for practically every need and every product. In this complete line, you will find the right gage for use at the machine, on the bench or in the inspection room. You will find that these P&W Gages and Comparators make it possible for you to establish and main-

tain higher, more dependable standards of product precision and quality and — in addition — will help you reduce your inspection time and costs to a minimum. Write now for complete information, outlining your quality control needs. Pratt & Whitney Company, Incorporated, 13 Charter Oak Boulevard, West Hartford, Conn.



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maintenance can be performed without disturbing the steam coil. Write: Selas Corp. of America, Dresher, Pa. Phone: Mitchell 6-6600

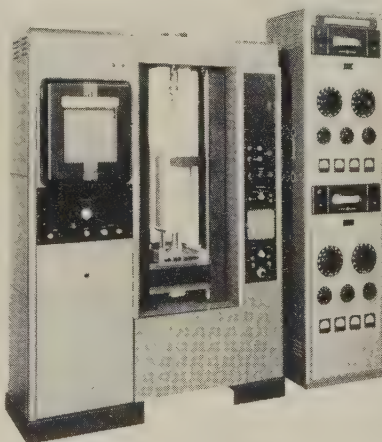
High Speed Belt

Rusco Ultra-Speed M is a flexible transmission belt that can operate at any speed (up to 100,000 rpm and above) over pulleys as small as $\frac{3}{8}$ in. in diameter.

The thin, flat belt is a blend of strong, stretch-resistant synthetic and natural fibers bonded together. Write: Russell Mfg. Co., 460 E. Main St., Middletown, Conn. Phone: Diamond 6-7866

Tensile Tester

This equipment can be used for tensile testing at temperatures up to 2200° F. More than 1500 lb of tensile force can be exerted at that temperature. A controller panel regulates temperatures within the furnace to $\pm 2^\circ$ F.



A dual furnace arrangement makes testing faster and more versatile. Write: Instron Engineering Corp., 440 Hancock St., North Quincy, Mass. Phone: Mayflower 9-7500

Deburring Machine

This vertical machine can deburr both sides of holes in flat and thin sections.

After the top spindle deburrs one side, it retracts and the bottom spindle deburrs the other side.

On thicker sections, both spindles deburr at the same time. The machine is controlled by foot so

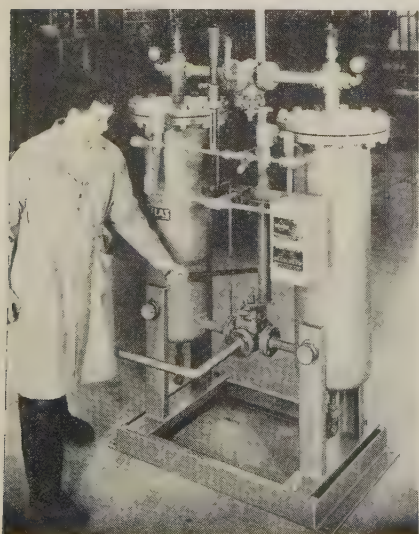


motion of the shaft cause grease to feed automatically into the bearing as it is needed. Write: Visiball Mfg. Co., P.O. Box 7021, Ft. Worth, Tex.

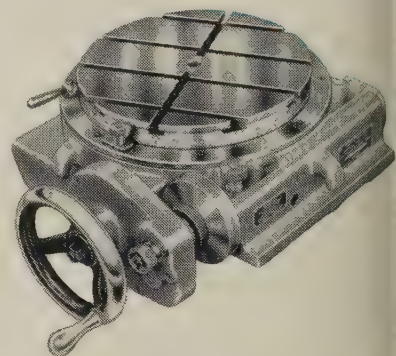
Dehydrators

Instrument air and process gas are dried by this line of steam-reactivated dehydrators. There are 11 models which handle from 10 to 1000 cfm (air at 70° F and 100 psig) in continuous operation with manual, semiautomatic, or automatic cycling.

Desiccant changes and other



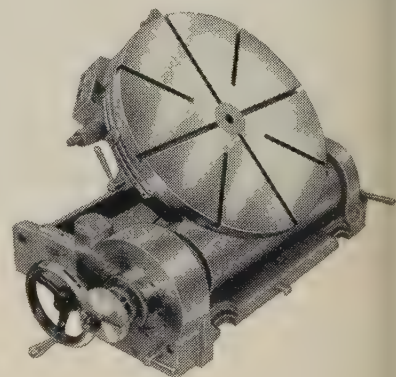
OTHER PRATT & WHITNEY PRECISION ROTARY TABLES



PLAIN . . . in 12" to 50"

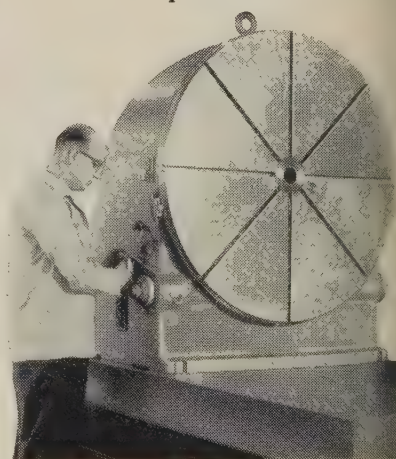
12" and 20" diameter hand-operated and 24", 30", 42" and 50" diameter motor driven models.

Also available in 42" tables with automatic indexing or with P&W Numerical Control.



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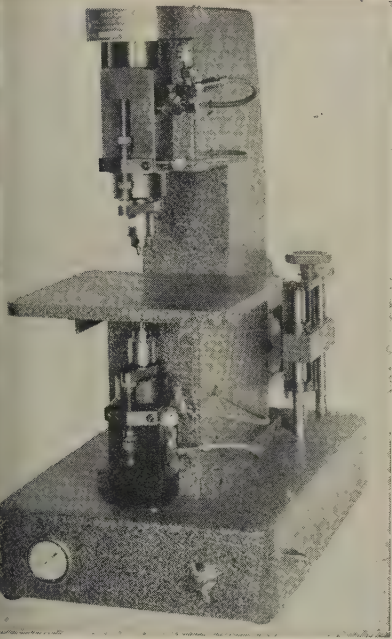
10" and 16" diameter hand-operated and 24" and 36" diameter power-rotated models.



VERTICAL . . . in 30" and 48"
diameters, motor-driven.



PRATT & WHITNEY



at both hands are free to handle
e work.

The machine is air operated
rough double acting cylinders.
rite: Model Machine Co. Inc.,
29 Hawthorne St., Philadelphia
Pa. Phone: Cumberland 8-4565

Open Hearth Frames

The design of these frames per-
mits a concentration of water at
critical burnout points, particular-
at the 9-in. arch areas. Twin
ch frames give added strength.
oor guides are water cooled.
Doors are also water cooled. A
ep refractory lining is held in
aced by studs. The studs burn
own with the refractory material
and are easily replaced when a
ew lining is inset in the door.
rite: Hutton Fabricating Mfg.
orp., 2736 E. 79th St., Cleveland
Ohio. Phone: Express 1-7432

Booster Pump

The B-12 produces pumping
peeds between 5200 and 6000 cfm
t pressures from 0.8 to 5 microns
t mercury. Inlet diameter is 12
A forepressure tolerance of 900
microns makes the booster useful
r installation in series with high
vacuum diffusion pumps.
The unit has a stainless steel
ody and external cooling coils. It
50 in. high and requires a pro-



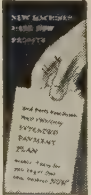
**HOW TO FORECAST
TOMORROW'S PROFITS**

**... AND MAKE THE FORECASTS COME TRUE
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You *don't* need a crystal ball for a look at tomorrow's profits. Just take an appraising look at your present machine tools and other plant equipment. The *only* way you can improve your competitive position and increase your profit margin is to reduce your production costs. If your present machines aren't up-to-the-minute ... with everything it takes to produce faster, more efficiently and economically ... you *can't* expect a bright profit future. To insure tomorrow's profits, you must invest *now* in the latest and finest.

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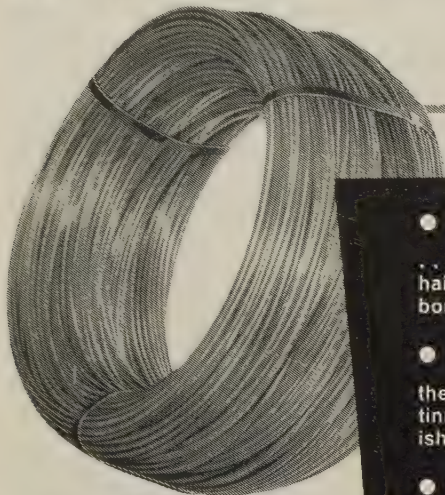


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ECONO-COIL—Reduces scrap loss up to 90 percent. Saves material handling time. The Econo-Coil gives you continuous length wire coils of 2000# to 3000# catchweight, in sizes from 12 gage through 1/2" diameter. Shipped on returnable Econo-Coil pallets.

LEVERPAK—Mechanizes your wire handling, protects wire against moisture, dirt and handling damage. LEVERPAK permits long uninterrupted runs of 500# to 650#, depending on wire sizes. Saves scrap, downtime, stores easily.

SPECIAL SHAPES—D-shaped, V-shaped, oval, half-oval, half-round, square, rectangular, triangular, key-stone-shaped and others. Saves fabricating and machining costs.

Chances are you have a problem right now that we can help you solve—with Wire. Call us.

- **Sizes up to 9/16"...**

... down to almost the size of a human hair, in low carbon and medium low carbon steels.

- **Wire of many finishes**

the right wire for the job—coppered, tinned, bright, galvanized and other finishes to fit your production needs.

- **Better forming and workability**

Continental Wire is available in almost any temper and analysis in low and medium low carbon steels for your particular forming jobs.

- **Metallurgical service**

Thousands of case histories provide unsurpassed resources for developing a practical solution to your wire problems.

NEW PRODUCTS and equipment

jected floor space of 20 x 30 in. Write: NRC Equipment Corp., 160 Charlemont St., Newton Highlands 61, Mass. Phone: Decatur 2-5800

Scrap Cutter

Slitting and coiling lines, pickle lines, pickle line trimmers, and other trimming operations use this laterally adjustable cutter to increase the time between knife changes.

The knives are the four-edge type made up in small length multiples.

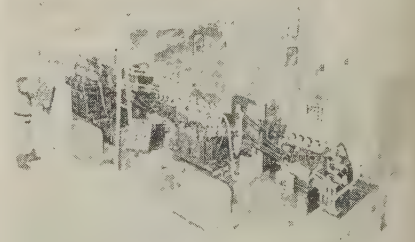


Scrap cutters for 48 in. and wider lines have dual drives which use a single, fixed knife holder over the entire length and two separate revolving knife holders, each with its own drive. Write: Stamco Inc., 125 S. Herman, New Bremen, Ohio. Phone: 2061

Boring Machines

Two standard cam-operated borers are used in an automation line set up for making steel gears.

The borers handle the work automatically and have automatic tool adjustment controlled by air gages to compensate for tool wear.



Parts are gaged before and after each operation. The first gaging prevents oversize parts from entering the machine. The entire blanks are finished before cutting the gear teeth. The two machines bore the inside diameter, turn the outside

CONTINENTAL

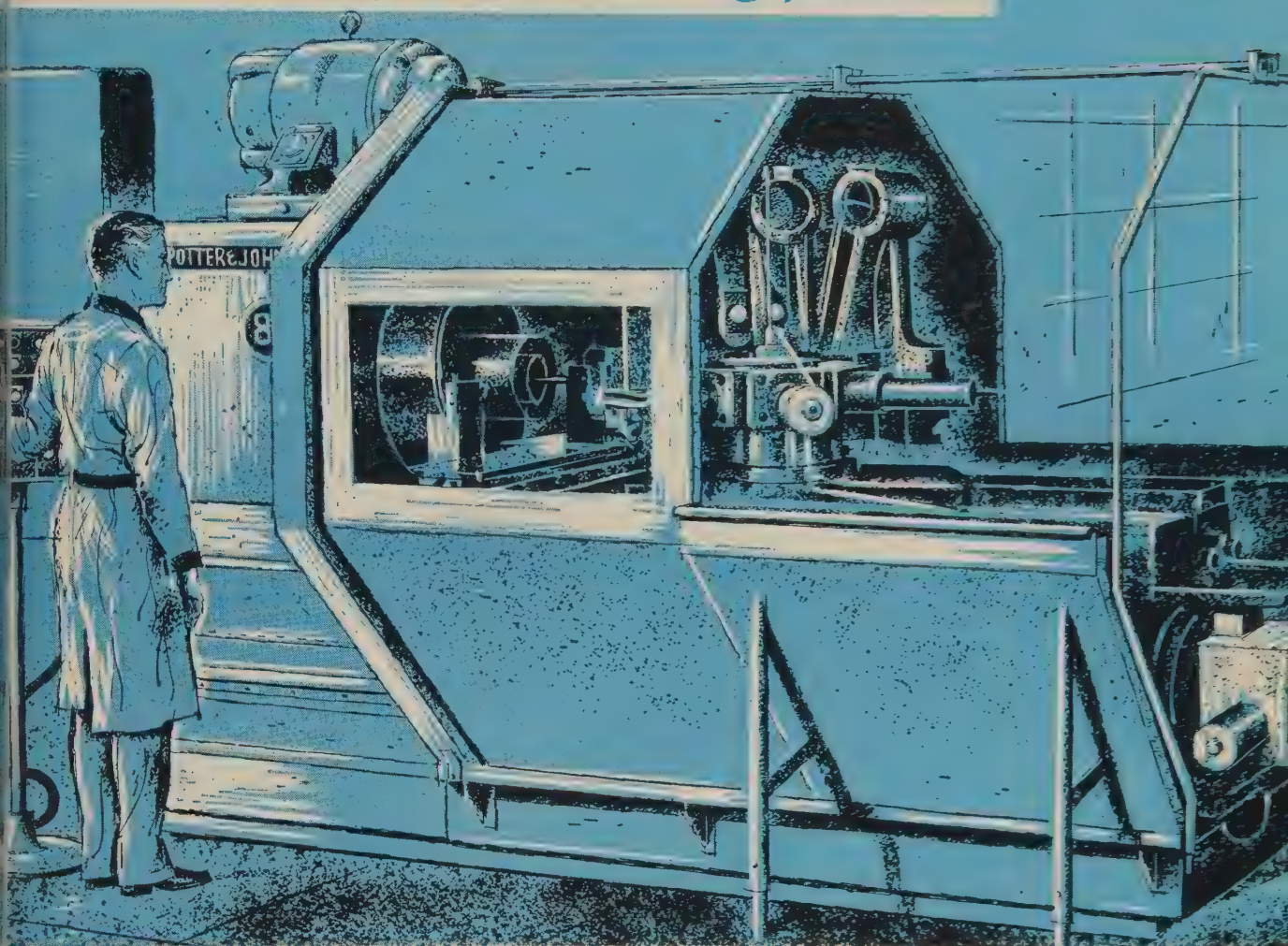
STEEL CORPORATION • KOKOMO, INDIANA

Wire Specialists
for over
Half a Century

PRODUCERS OF Manufacturer's Wire in many sizes, tempers, and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, and special shaped wire. Also Welded Wire Reinforcing Fabric, Nails, Continental Chain Link Fence, and other products.

STEEL

*Here it is the machine
industry's been asking for ! **



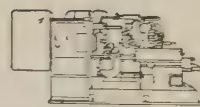
THE **NEW P & J 8-U**

AUTOMATIC Turret Lathe

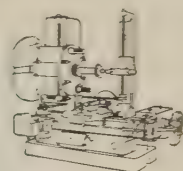
***A MACHINE TO FILL THE GAP BETWEEN OUR 6 DREL-40 AND 10-U**

Here is a new automatic with the extra power, rigidity and capacity you may be looking for. It's designed and engineered to handle your really big, hard-to-machine jobs faster, better and more economically than ever before. It will hog out tough alloys in a hurry, hold close tolerances and produce fine finishes with speed and efficiency. The 8-U with 50 hp, 30" chuck and 40" swing is intermediate in size between our 6 DREL-40 and 10-U. Take a minute now to write for specification circular and see how the new P&J 8-U fits into your production schedules.

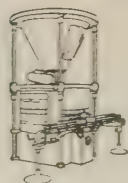
Potter & Johnston Company, Pawtucket, Rhode Island.



AUTOMATIC TURRET LATHES



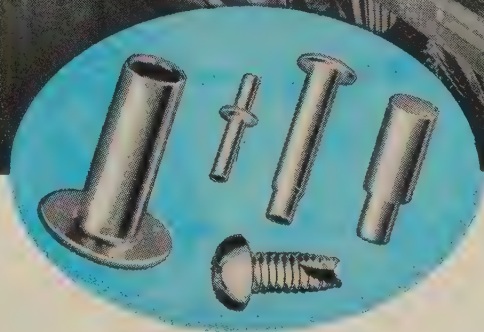
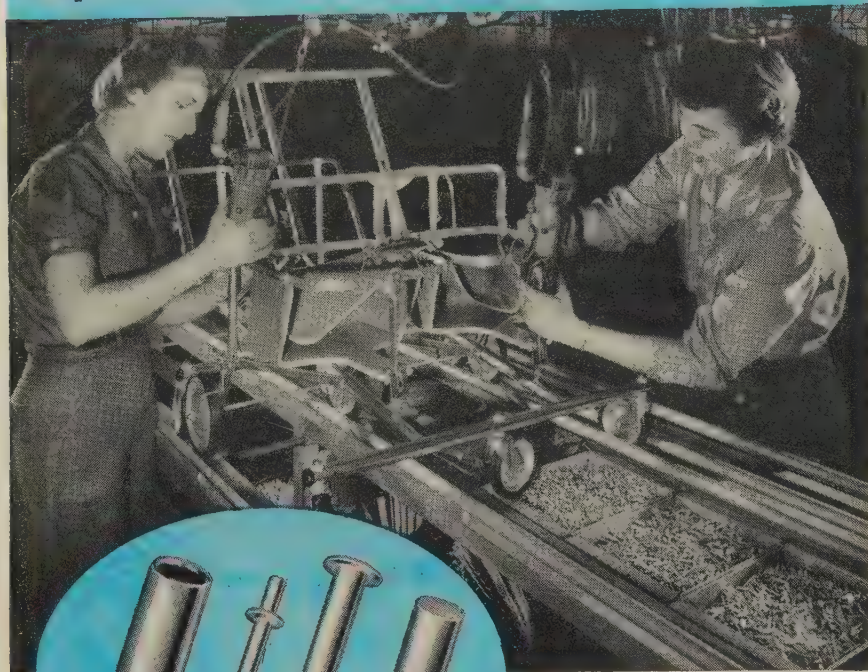
GEAR CUTTERS



GILDA PACKAGING MACHINES

POTTER & JOHNSTON
SUBSIDIARY OF PRATT & WHITNEY COMPANY, INC.
PRECISION PRODUCTION TOOLING SINCE 1898

Foldability of Peterson Folda Products Depends Upon Quality Townsend Fasteners



The popular size twin stroller, only stroller with side-by-side seating which will go through standard doorways, being assembled on A. E. Peterson production line.

The extensive line of Folda products produced by A. E. Peterson Manufacturing Company, Glendale, California is designed for baby's safety and comfort—for mother's ease of handling. For instance, she has a choice of ten types and models of strollers.

In designing these unique folding walkers, strollers, chairs, swings, seats and steps, Peterson engineers also had quick, secure, efficient production line assembly in mind. That's why they chose Townsend Company special cold-formed parts, tubular rivets and tapping screws to do the fastening job.

Townsend special parts are used to attach the front wheels, casters and axles. Townsend standard and special tubular rivets are used at all

pivot points—the important feature which permits folding for easy storage and handling of their products. Townsend tapping screws are used to attach arm rests and other non-removable parts.

Peterson officials give credit to dimensionally perfect Townsend parts for the permanent fastening they accomplish which has done much to establish their reputation for quality.

In your assembly operations why not take advantage of Townsend's experience in designing and manufacturing special and standard fasteners for a multitude of uses in all industry. To learn more about how to increase fastening efficiency, write for Bulletin TL-96a to Townsend Company, P.O. Box 237C, New Brighton, Pa.

The Fastening Authority

Townsend

COMPANY • ESTABLISHED 1816

NEW BRIGHTON, PENNSYLVANIA

Sales Offices in Principal Cities

Cherry River Division • Santa Ana, California

In Canada: Parmenter & Bulloch Manufacturing Company, Ltd., Gananoque, Ontario

NEW PRODUCTS and equipment

diameter, face both sides, and chamfer the edges.

When the work leaves the machines, the blanks are gaged. As dimensions approach their limits, the tools are adjusted automatically through electrical impulses from the gages.

Either machine can be shut down for changing tools while the other continues to operate. Use of storage-distribution units which can hold hundreds of parts makes this possible. Write: Ex-Cell-O Corp., 1200 Oakman Blvd., Detroit 32, Mich. Phone: Townsend 8-3900

Impact Wrench

Model 300 is an electric wrench with a torque range of 300 to 450 ft lb. The tool is suited for heavy nuts $\frac{7}{8}$ in. in diameter and up, as well as for cap and lag screw driving and removal.

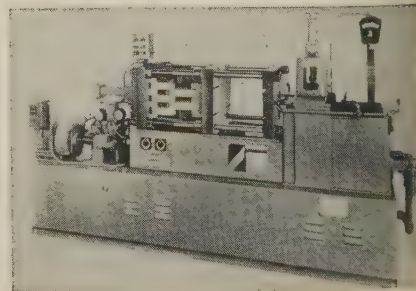


The wrench reaches maximum torque in six seconds. It can be used on direct or alternating current. Write: Black & Decker Mfg. Co., Towson 4, Md. Phone: Valley 3-4400

Diecaster Is Fast

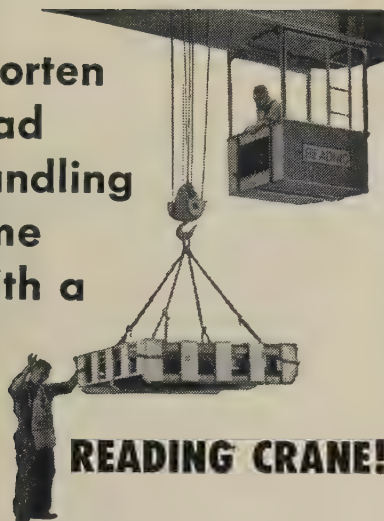
Up to 500 shots an hour can be made by this machine. It handles shot capacities up to 4 lb. Locking pressure is 150 tons.

The die stroke is 8 in. Die



STEEL

Shorten
load
handling
time
with a



READING CRANE!

One well-known stove manufacturer wanted to speed-up assembly—a call to Reading Engineers led to complete solution. A 10-ton, double I-Beam, cab-controlled Reading Crane brought even better results than expected.

Get complete information from our latest 6-page bulletin "The Why and How of Faster Production". Write today.

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CHAIN HOISTS • OVERHEAD TRAVELING CRANES • ELECTRIC HOISTS

2102 ADAMS ST., READING, PA.

NEW PRODUCTS and equipment

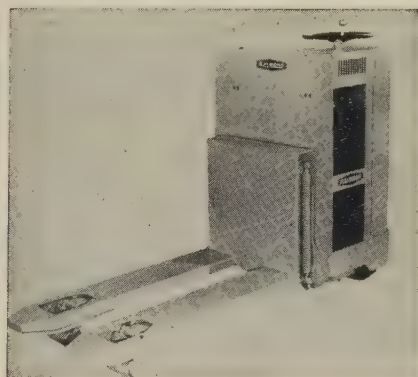
platens are 20 x 21 in.

Model 150Z is a goose neck machine for zinc, tin, and lead. Its plunger is hydraulically operated.

Model 150A is a cold chamber type unit for aluminum, brass, and magnesium. Write: American Die Casting Machinery Co., 1517 W. Thomas St., Chicago 22, Ill. Phone: Armitage 6-3334

Pallet Truck

This low-lift truck has a capacity of 4000 lb. It can stack 48-in. pallets at right angles to an aisle 6 ft wide. It has three speeds in forward and reverse. Maximum speed is 4½ mph.



Tips of the forks are tapered to make it easy to enter the pallets. Write: Raymond Corp., 91-155 Madison Ave., Greene, N. Y.

Positioner

Work loads of over 1000 lb can be handled by this positioner and assembly stand. It has a universal adapter plate to which any type of fixture can be attached.

The stand can be used as a weld positioner and assembly stand. It also can be used for equipment maintenance and servicing. Write: K. R. Wilson Inc., Arcade, N. Y.

Molten Metal Pump

The Centrifugal Gusher Pump, Model 9025-M, handles molten metals (solder, tin, lead, zinc) at temperatures up to 700° F.

Three aluminum cooling fans rotate simultaneously with the stainless steel shaft to keep the motor cool.

The vertical pump provides ca-

SANTOS DUMONT was NEWS



Santos Dumont was not a place, but a person — from Brazil. He gained a great deal of attention in 1907, when he flew an aeroplane a distance of 235 yards in 21 seconds — carrying a passenger! This historic flight took place in Paris, and was "news" all over the world. Curiously enough, few people at that time were aware of the Wright brothers' history-making flight at Kitty Hawk in 1903; most people then thought of "aviation" as floating about in balloons or dirigibles. It was something you watched at the County Fair — or perhaps at the International Bennett Cup Race.

In this era of scientific and industrial pioneering, our founders Soren Sorensen and John Christensen came west to Cincinnati and started making gears. Cincinnati Gear's beginning was as modest as the aviation industry's; and like the aviation industry, we have grown and progressed significantly in the past fifty years. But one thing has not changed — our old fashioned attention to detail, that insures our gears being 100% right every time. It results in a reliability and dependability that our customers like — that you'll like too. Why not try us for your next custom gear order?

THE CINCINNATI GEAR CO.

CINCINNATI 27, OHIO

Fifty Years of "Gears—Good Gears Only"

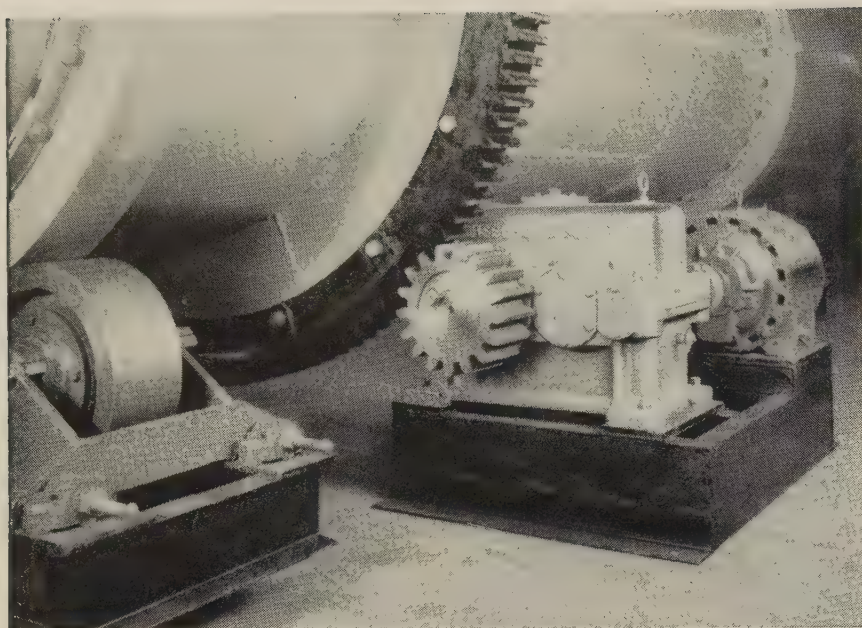


QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE
NATION'S LARGEST
AND MOST MODERN
PRODUCTION
FOUNDRIES

ESTABLISHED 1866
THE WHELAND
COMPANY

CHATTAHOOGA 2, TENN.

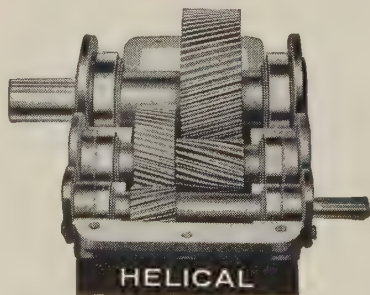


H&S speed reducer delivers 10 maintenance-free years of continuous service

Manufactured by the Louisville Drying Machinery Unit of the General American Transportation Corp., this Barite Dryer was installed in 1945. The H&S Size 2400 Speed Reducer and H&S Drive Pinion and Gears that you see above have given over 10 maintenance-free years of continuous moderate-shock service.

H&S Herringbone, Helical and Worm Gear Speed Reducers have been serving heavy industry for 26 years. If you are looking for dependable, trouble-free power transmission, won't you contact your H&S representative or write us today?

H&S Reducers are available in single reduction units in ratios up to 100 to 1; in combination units up to 700 to 1; and in double reduction units up to 10,000 to 1.



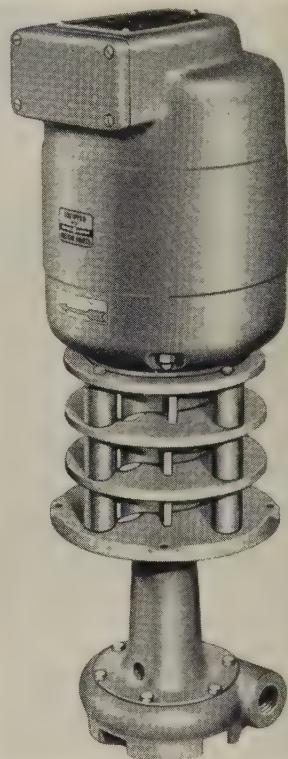
H&S Gears: There are 9 types for you to choose from! Spur Gears are cut up to 144" diameter and 1 D.P. Write today on company letterhead for the new H&S Gear Catalog No. 57.

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 Hamilton Avenue
Cleveland 14, Ohio

NEW PRODUCTS and equipment



capacities up to 7 gpm and heads up to 8 ft. **Write:** Ruthman Machinery Co., Cincinnati 2, Ohio. **Phone:** Main 1-5462

Alloy Steel

Byloy Grade W-2 is a combination of manganese, molybdenum, copper, and boron alloyed with steel in the electric furnace. The alloy has high strength and is resistant to fatigue and abrasion.

The steel is available in hot rolled plates and bars and can be supplied to specified hardness ranges. It is suitable for cold and hot forming, shearing, flame cutting, forging, machining, and weld joining. **Write:** Steel Sales Dept., A. M. Byers Co., Box 1076, Pittsburgh 30, Pa. **Phone:** Atlantic 1-8110

Truck Is Versatile

The FloorMaster is a selector truck that can be used with a tractor-trailer system, an in-floor dragline, or in manual operation.

The trucks are equipped with 8-in. casters and either 10 or 12-in. main wheels. Nine deck sizes are available, from 30 x 48 in. to 36 x



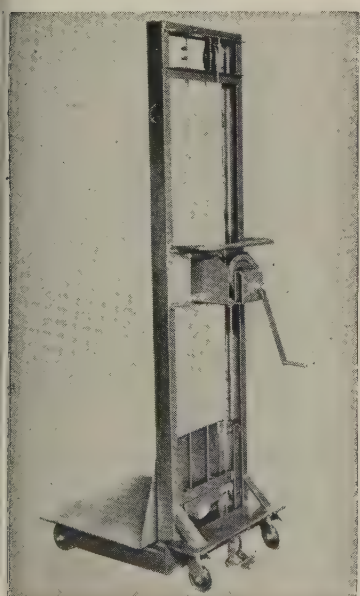
in. Write: Dept. R-14, Lewis-
Separd Products Inc., 125 Walnut
Watertown 72, Mass. Phone:
Watertown 4-5400

Heating Element

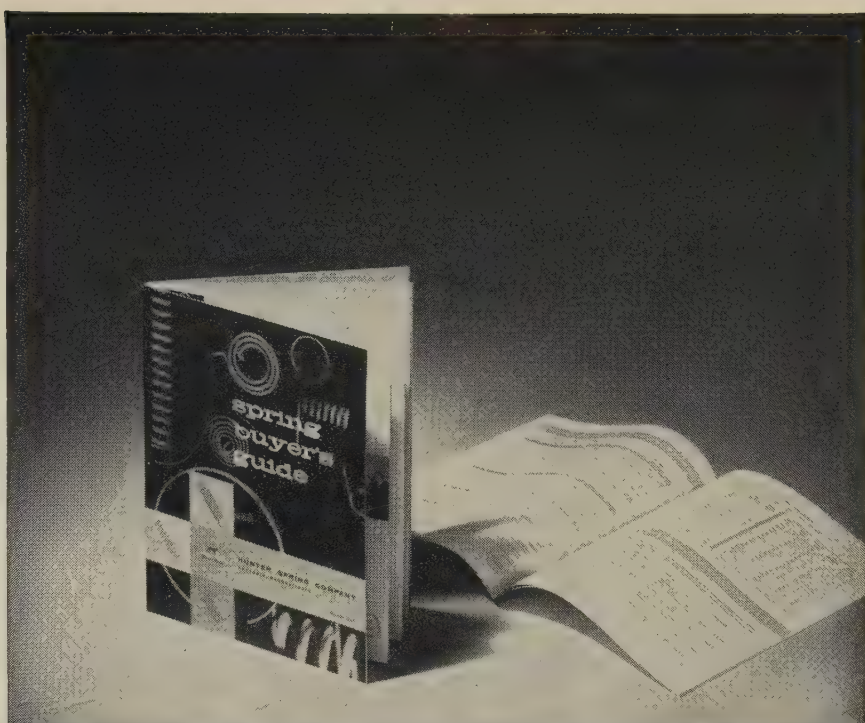
The Delta silicon carbide ele-
ments are used in periodic or con-
tinuous applications which require
temperatures up to 2800° F. They
can be used in oxidizing and pro-
tective atmospheres. Write: Globar
Co., Carborundum Co., P.O. Box
10, Niagara Falls, N. Y. Phone:
31

Mechanical Lifter

This crank up, crank down unit
has a capacity of 1000 lb. It lifts
69 in. per crank revolution.



The unit will lift 69 in. from
floor level. Write: Colson Corp.,
Merrimack, Mass. Phone: Somer-
set 6-3025



* subjects

Spring Terminology
Typical Spring Buying
Headaches
How to Avoid Spring
Buying Headaches
Recording Special Quality
Standards
How Springs Are Priced
and Quoted
Analyzing Quotations
Refusals to Quote
Buying in Quantity
Specifying Practical
Tolerances
Specifying Ends, Hooks,
and Arms
Specifying Finishes
Packaging
How to Verify Quality
Reducing Rejects
Characteristics of Spring
Materials
Cost Comparisons of
Spring Materials
Available Reference Data

BEST SELLER

for the spring buyer

Twelve pages of pertinent facts* and
helpful advice on precision mechanical
springs make up the new
"Spring Buyer's Guide"—just published
by Hunter and already much in demand.

Pictures, tables, and text are
arranged to give the buyer of springs
a realistic picture of his relations with
his supplier, and how they affect cost,
delivery and quality of these
important parts.

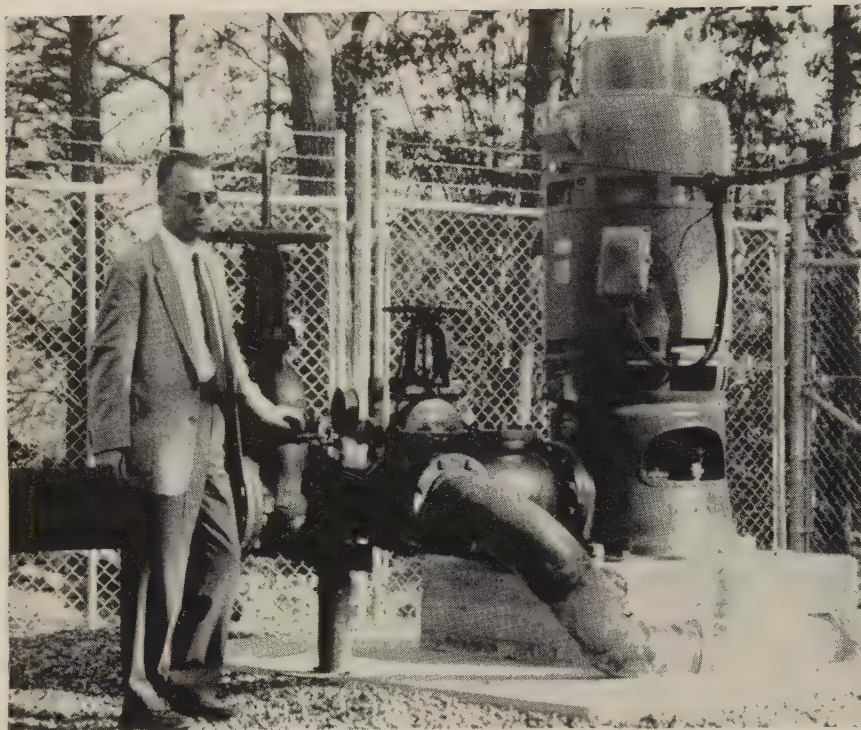
Your request on Company letterhead
will bring a copy promptly. Just ask
for Bulletin 301C.



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19 Spring Avenue, Lansdale, Pennsylvania

Manufacturers of: Precision Springs, NEG'ATOR® & FLEX'ATOR®
Constant-Force Springs, Stampings & Assemblies, Retriever
Reels, Force Gages, and Wire Fatigue Testers



This Deming 4700 Vertical Turbine Pump discharges 1600 gallons of water per minute!

HOW LOW COST WATER CAN ADD TO PLANT PROFIT

High cost water can be an important factor in plant operating costs . . . knowing this, one eastern paper manufacturer checked into possible savings that might result from establishing and operating his own water supply.

First—A Deming distributor was consulted. Sydnor Pump and Well Co., Richmond, Virginia, made a preliminary survey of the ground water characteristics of the area.

Second—A test well was drilled to obtain complete geographical data.

Third—After studying survey results and geological data, a well 16 inches in diameter, 750 feet deep was drilled. A Deming 4700 Vertical Turbine Pump, water-lubricated type, was installed with a setting of 250 feet. The pump discharges approximately 1600 gallons per minute.

"We selected this Deming Turbine Pump for its water-lubricated design and semi-open, easily-adjustable impellers," said Mr. H. C. Berkely of Sydnor Pump and Well Co.

A Factory-Owned Water Works

This installation by an experienced Deming distributor meets the customer's present volume needs for pure water and provides for increased volume needs at lower cost.

*For specific data on Deming Vertical Turbine Pumps,
write for free BULLETIN 4700-A.*

THE DEMING COMPANY — 535 Broadway - Salem, Ohio

DEMING

INDUSTRIAL PUMPS

NEW Literature

Write directly to the company for a copy

Linear Amplifiers

Bulletin 3001-7, 2 pages, gives electrical and mechanical specifications, performance data, and uses of a linear amplifier. Victoreen Instrument Co., 5806 Hough Ave., Cleveland 3, Ohio.

Titanium

Buyer's Guide No. 3 lists prices of mill products and includes complete information on titanium alloy Ti-5Al-2.5Sn. Titanium Metals Corp. of America, 233 Broadway, New York 7, N. Y.

Vertical Miller

A machine that does three-dimensional tracer milling is discussed in this 6-page bulletin. Sundstrand Machine Tool Co., 2531 11th St., Rockford, Ill.

Immersion Processing

Bulletin 61, 8 pages, describes electroplating, aluminum anodizing, stripping, cleaning, pickling, bright dipping, and phosphating and how they can be done on automatic rack processing and plating machines. Frederic B. Stevens Inc., 1800 18th St., Detroit 16, Mich.

Value Analysis

Characteristics of standard and pearlitic malleable iron castings are discussed in this 8-page bulletin. Malleable Founders' Society, 1800 Union Commerce Bldg., Cleveland 14, Ohio.

Electrode Holder

Fully insulated, 300 and 400-ampere electrode holders are described in this 4-page bulletin. Lincoln Electric Co., Cleveland 17, Ohio.

Cap Screws


Self-locking and self-sealing hexagon head screws are described in this 4-page bulletin. Cleveland Cap Screw Co., Box 579, Cleveland 28, Ohio.

Socket Head Screws

This 8-page bulletin gives torque-tension data on socket head cap screws. Mac-it Screw Div., Strong, Carlisle & Hammond Co. Inc., 1392 W. Third St., Cleveland 13, Ohio.

Rubber Parts

Punched products, gaskets, and descriptions of natural rubber and syn-



**NOW! Available for
prompt shipment to all
points in continental U.S.**

In these modern annealing furnaces, a clean, dry nitrogen atmosphere assures clean, bright sheet. Annealing temperature is measured accurately with load thermocouples for proper control of temperature of crystallization of the rolled metal structure and to insure meeting specified mechanical-property limits.

Anaconda Aluminum Coiled Sheet

ALUMINUM COILED SHEET produced to the high standards of quality and uniformity maintained by The American Brass Company is now available for prompt shipment from our Torrington Division to all points in the United States.

It is rolled on the most modern, high-speed equipment, X-ray controlled to close tolerance in gage. High-speed, electronically operated slitters give exact widths with clean edges on evenly and tightly wound coils. Latest annealing furnaces—with controlled atmosphere and temperature—provide high uniformity of metal structure to meet specified mechanical-property limits.

IN THESE WIDTHS: Maximum 28 inches
Minimum $\frac{3}{8}$ inch

IN THESE THICKNESSES: Maximum 0.064 inch
Minimum 0.006 inch

COIL WEIGHTS: Up to 100 lb. per inch of width
ARBOR SIZES: 4, 6, 8, 10, 12, 16, and 20 inches in diameter

ALLOYS: 1100, 3003, 3004, 5005, 5050, 5052

TEMPERS: Alloy Nos. 1100, 3003, 5005

—O, —H12, —H14, —H16, —H18

Alloy Nos. 3004, 5005, 5050, 5052

—O, —H32, —H34, —H36, —H38

FOR IMMEDIATE ACTION, call The American Brass Company Office nearest you. The American Brass Company, Waterbury 20, Conn.

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ANACONDA[®]

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Made by The American Brass Company

Bright Annealing?
Normalizing?
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You Can't beat

CONTINENTAL TOP HAT

COVER-TYPE ANNEALER

Faster and More Uniform Heating Rate

Extra large volume of recirculating atmosphere.

Highest Production per Unit

Versatility

Can be used for bright annealing, normalizing, nitriding, or spheroidizing coiled wire or strip—ferrous or nonferrous.

High Efficiency

No radiant tubes.

Long Hood Life

No flame impingement.

Full particulars and recommendation for any job on request.

6367

NEW LITERATURE

thetics are covered in this 12-page bulletin. Williams-Bowman Rubber Co., 1945 S. 54th Ave., Cicero 50, Ill.

Inert Gas Generators

Bulletin 114, 4 pages, lists capacities, dimensions, and operating details of standard generators. Thermal Research & Engineering Corp., Conshohocken, Pa.

Hose Fittings

Full flow fittings and hose for medium pressure service are described in Bulletin 4434, 4 pages. Tube & Hose Fittings Div., Parker Appliance Co., 17325 Euclid Ave., Cleveland 12, Ohio.

Meter for Liquids

Bulletin 54-766-38, 8 pages, describes construction and operation of meters which indicate and total liquids. Hays Corp., Michigan City, Ind.

Clutches and Brakes

Electromagnetically operated, disc type friction brakes and clutches are described in this 8-page bulletin. Dynamic Div., Eaton Mfg. Co., Kenosha, Wis.

Carbides, Bits, Flat Stock

TTI-57 is a 56-page catalog on carbide tips, tools, and inserts. High-speed steel tool bits are listed in Bulletin TBI-57, 8 pages. An oil and an air hardening steel grade of ground flat stock are covered in Bulletin GFSI-57, 8 pages. Firth Sterling Inc., 3113 Forbes St., Pittsburgh 30 Pa.

High Temperature Alloy

This 24-page bulletin describes the properties of an alloy recommended for use at high stresses up to 1500° F and at moderate stresses up to 2000° F. Literature Distribution Section, Haynes Stellite Co., division of Union Carbide Corp., 30-20 Thompson Ave., Long Island City 1, N. Y.

Phosphating Large Parts

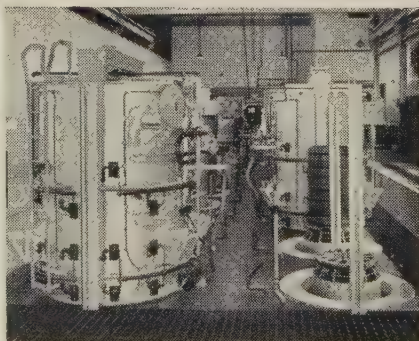
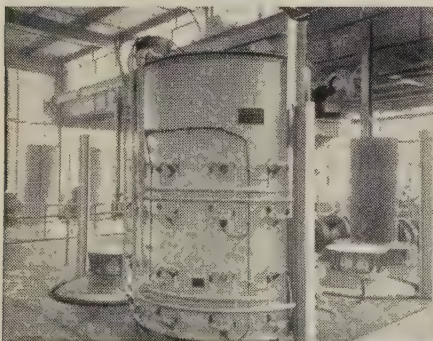
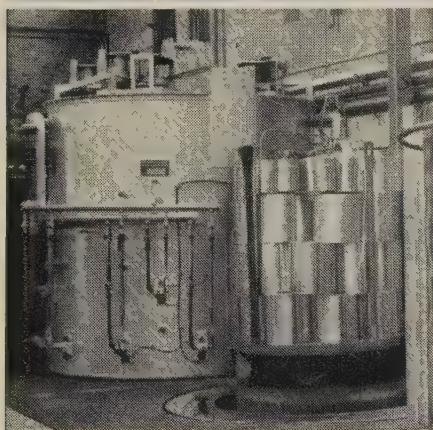
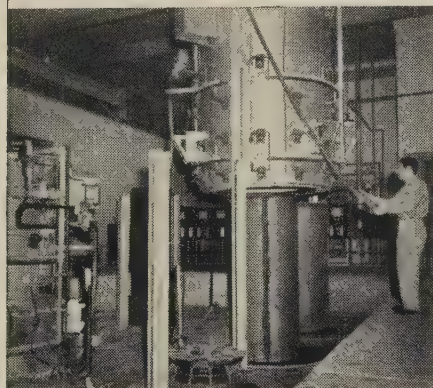
Bulletin B-6624, 2 pages, tells how to phosphate parts too large for tanks or spray machines. Oakite Products Inc., 134E Rector St., New York 6, N. Y.

Crawler Crane

A 1 yard, 25 ton capacity crane is described in this 20-page bulletin. Bay City Shovels Inc., Bay City, Mich.

Precision Strip

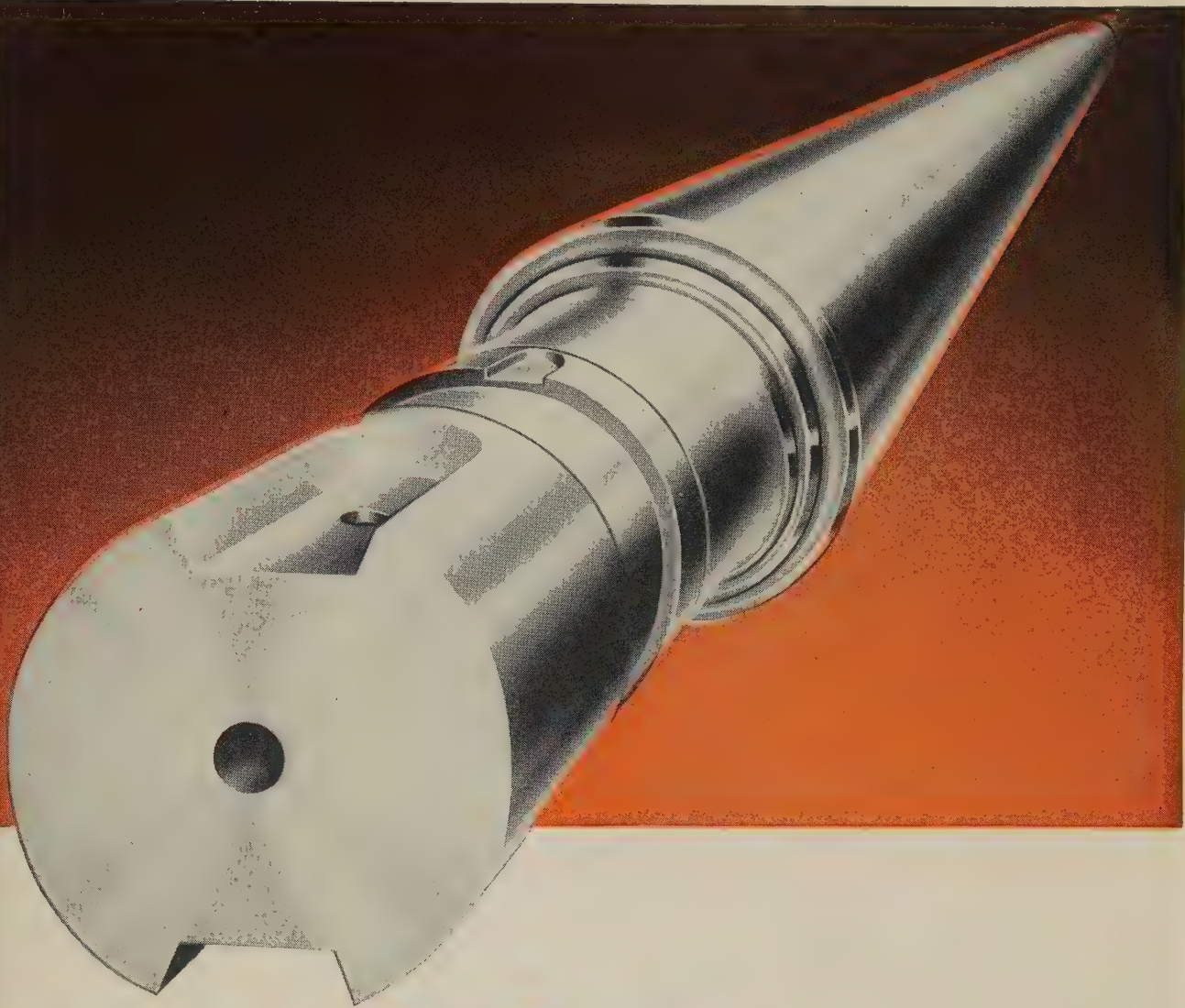
Beryllium copper, chromium copper, phosphor bronze, nickel silver, brass, stainless, and nickel-iron strip rolled



Over One-Third of a Century of Progress in
FURNACES • PRODUCTION LINES • SPECIAL MACHINES • COMPLETE PLANTS

CONTINENTAL INDUSTRIAL ENGINEERS, INC.

176 West Adams Street, Chicago 3, Illinois



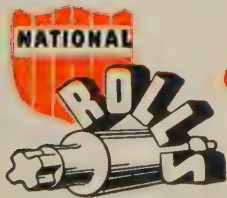
precision...

One of the unseen extra values you get in every NATIONAL ROLL

Yes, precision is an unseen value, but a very important one in roll production, because you must have precision machined rolls to give your customers precision and uniformity in rolled metals.

That's why National has always given such close attention to producing and machining rolls to exact

specifications and close tolerances . . . and today, more than ever before, as a division of General Steel Castings, National has modern facilities plus additional metallurgical experience of the parent organization to give you rolls that will more than meet your expectations. Try National rolls and see.



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NATIONAL ROLL & FOUNDRY DIVISION

Avonmore (Westmoreland County) Pennsylvania

General Steel Castings Corporation: General Offices, Granite City, Ill. • Plants: Granite City, Ill.—Eddystone, Pa.—Avonmore, Pa.

NEW LITERATURE

to close tolerances and thin gages are described in this 12-page bulletin. Penn Precision Products Inc., 501 Crescent Ave., Reading, Pa.

Cleaning Solvent

Properties and uses of a cold cleaning solvent are described in a 16-page bulletin. Solvent Sales Dept., Dow Chemical Co., Midland, Mich.

Speed Reducers

Torque arm and flange mounted worm gear reducers are covered in bulletin SM-57, 8 pages. Winsmith Inc., Springville (Erie County), N. Y.

Substations

Package unit substations are described in Bulletin SD-61, 8 pages. Dept. SA, Square D Co., 6060 Rivard St., Detroit 11, Mich.

Rod and Wire Handling

An automatic system for handling rod and wire coils is described in Bulletin 3-57-W, 4 pages. Lee Wilson Engineering Co. Inc., 20005 W. Lake Rd., Cleveland 16, Ohio.

Wire, Rod, and Strip

Chemical, physical, and mechanical properties of Monel, nickel, nickel-clad copper, Inconel, Incoloy,

Nionel, Ni-Span C, and stainless and heat resisting steels are given in this 35-page handbook, No. 12. Techalloy Co. Inc., Rahns, Pa.

Carbon and Graphite

High temperature uses and properties of carbon and graphite are discussed in this 8-page bulletin. Speer Carbon Co., St. Marys, Pa.

Magnetic Motor Starters

Size 0 and 1 starters are covered in Bulletin GEA-6611, 20 pages. General Electric Co., Schenectady 5, N. Y.

Electrical Steel

Here's a 20-page bulletin describing an iron-nickel steel. Advertising Dept., Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh 22, Pa.

Load Handling

A truck which carries materials in a detachable steel container is covered in Bulletin 457, 4 pages. Ingersoll Kalamazoo Div., Borg-Warner Corp., 1810 N. Pitcher St., Kalamazoo, Mich.

End-Welding Studs

This 38-page bulletin lists dimensions of studs, ferrules, and weld fillets and describes plating, annealing, flux, and analyses and mechanical properties of stud materials. Nelson Stud Welding Div., Gregory Industries Inc., Lorain, Ohio.

Bin Unloading

Bulletin 500-830, 4 pages, describes a device that unloads coal and other bulk solids without arching, rat holing, or funneling. Technical Information Dept., Bituminous Coal Research Inc., 121 Meyran Ave., Pittsburgh 13, Pa.

Adjustable Shelving

A line of steel shelving is described in Bulletin SE-5, 6 pages. Penco Metal Products Div., Alan Wood Steel Co., 200 Brower Ave., Oaks, Pa.

Structural Steel

Complete technical information (including loading tables) on joists, studs, channels, ribbed decking, and curtain walls is presented in this 24-page bulletin. Stran-Steel Corp., Detroit 29, Mich.

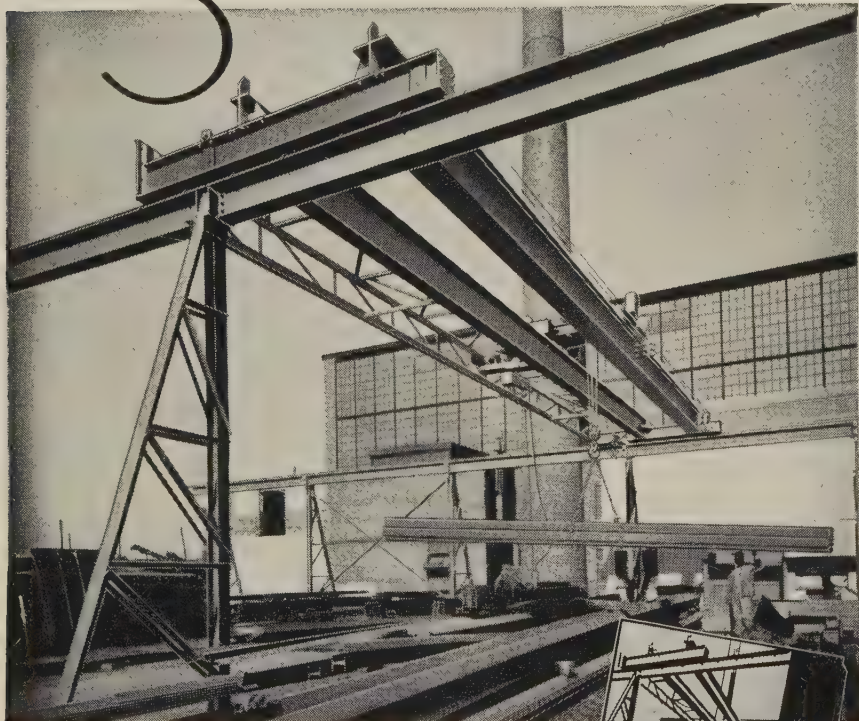
Stainless Fasteners

This 8-page bulletin lists screws, nuts, bolts, washers, rivets, and government specification AN fasteners. Allmetal Screw Products Co. Inc., 821 Stewart Ave., Garden City, N. Y.

Portable Machining Tool

Bulletin VM-57, 28 pages, describes a portable tool that does milling,

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- You save on engineering cost because there's a standardized CRANEMASTER for virtually every building condition.
- You save on production cost because time and material savings of modern manufacturing techniques are passed along to you.
- You gain long term efficiency, because CRANEMASTER is soundly designed and carefully built for maximum performance, minimum maintenance.

CAPACITIES to 15 TONS—SPANS to 60 FT.

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Describes in detail the many design and operating advantages of CRANEMASTER overhead traveling Cranes. Also explains how Abell-Howe provides competent service from original survey to final installation.

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NEW LITERATURE

ing, shaping, slotting, grinding, milling, and other machining operations. Dumore Co., 1300 17th St., Racine, Wis.

Reinforced Concrete

Use of welded wire fabric in building construction is described in this page manual. Dept. 50, Wire Reinforcement Institute Inc., 1049 National Press Bldg., Washington 4, D.C.

Stamping Machines

Multislide machines for the automatic production of precision stampings are described in Bulletin 15, 16 pages. U. S. Tool Co., Ampere (East Orange), N. J.

Centralized Filtration

Systems for cutting oils, water base emulsions, grinding oils, honing and tapping oils, and other fluids are described in Bulletin FB100, 4 pages. S. Hoffman Machinery Corp., 105 North 4th Ave., New York 3, N. Y.

Liquid Strainers

Self-cleaning strainers with perforations 0.023 in. in diameter are described in Bulletin W-6SC, 4 pages. Elden-Anderson Valve Specialty Co., 12 Ridge Ave., Pittsburgh 33, Pa.

Magnetic Chucks

Control units for quick demagnetization of low voltage magnetic chucks are described in this 6-page bulletin. Sundstrand Magnetic - Pneumatic Products Div., Sundstrand Machine Tool Co., 1020 Ninth St., Rockford, Ill.

Milling Cutters

Catalog HSS-1, 32 pages, describes high speed steel cutters for machining aluminum, light metal alloys, and ferrous materials. Goddard & Goddard Inc., 12280 Burt Rd., Detroit 23, Mich.

Pipe Bending

Methods of bending carbon, alloy, and stainless steel tubing and pipe are discussed in Bulletin TDC-187, 8 pages. Tubular Products Div., Babcock & Wilcox Co., Beaver Falls, Pa.



NEW BOOKS

Materials Handling Equipment, D. Oliphant Haynes, Book Div., Chilton Co., 56th and Chestnut St., Philadelphia 39, Pa. 636 pages, \$17.50. Basic types of equipment and their capabilities, unit-load handling, integration of production machinery with handling equipment, package han-

dling, analysis and design of handling systems, cost analysis, and the organization and control of handling systems are included in this basic text.

Design of Die Castings, Gustav Lieby, American Foundrymen's Society, Golf and Wolf Rds., Des Plaines, Ill. 208 pages, \$8.

Features of diecast products, methods and processing principles, die design and construction, and tolerances are discussed in this translation of the German edition.

Ductile Chromium, American Society for Metals, 7301 Euclid Ave., Cleveland 3, Ohio. 376 pages, \$7.50.

New fields of usefulness for chromium and its alloys are forecast. This book covers work on the extraction, fabrication, and properties of the metal.

Scrap Yearbook, 1957 Edition, Institute of Scrap Iron & Steel Inc., 1729 H St. N.W., Washington 6, D. C. 100 pages, \$3.

Scrap consumption, exports, and imports are tabulated. Included are specification, prices, and stocks.



WORLD'S LARGEST OPEN HEARTH FURNACE

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Late in 1956, the largest open hearth furnace in the world was tapped at Weirton Steel Company, Division of National Steel Corp., Weirton, W. Va.

Designed and built by Loftus Engineering Corp., this huge furnace has a rated capacity of 600 tons, is approximately 111 feet long by 30 feet wide, and construction was completed in less than a

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If you are planning expansion or modernization of your heating facilities (ferrous or non-ferrous), we would like to demonstrate how Loftus' long experience in furnace design and construction can benefit you. Write us today. There is no obligation.

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From first heat to heat treat, look to

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Acme-Newport

ELECTRICAL SHEETS PUNCH FAST AND CLEAN



Users' immediate success in punching Acme-Newport sheets and in assembling motors, generators and other rotating equipment is largely the result of this Company's scientific control of all melting, rolling, annealing and finishing processes. The uniform gage of these sheets, their clean punching characteristics and dependable quality are attained by the combination of Acme-Newport's modern facilities and their half-century experience in producing electrical sheets to specifications of leading electrical equipment manufacturers. Our electrical engineers would like to discuss your requirements and our ability to fill them.

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COMPANY

NEWPORT, KENTUCKY

A SUBSIDIARY OF **ACME STEEL** COMPANY

STEEL SHORTAGES shouldn't plague buyers gain soon.

Not only have some of the buying incentives disappeared, but steelmaking capacities are rising substantially (see Page 79).

BULGE—The round of expansion which began in 1955 is adding 7.6 million tons this year to the nation's capacity for making steel for ingots and castings. This is the most that has come in per year in the current round. It means that the country's capacity next Jan. 1 will be 41 million tons, a 5.6 per cent increase over that of last Jan. 1.

KEEPING UP—Not only is the capacity to melt steel being expanded, but the capacity to finish it is being enlarged and updated. A case of updating is Inland Steel Co.'s steps to enlarge its capacity to produce wide flange beams and to discontinue production of railroad rails. Wide flange beams have become popular as a construction material, while demand for rails has declined with the contraction in railways.

This year's 7.6 million ton increase in steel-making capacity is on top of last year's 5,096,000 ton rise. Another 5.3 million tons are under construction and will be completed next year.

COOLERS—These additions have been one of the factors in lessening consumers' zeal to buy steel. They know there's a bigger supply available. At the same time, they don't have to hoard inventory to carry them over a steelworkers' strike. The present three-year steel labor contract promises labor peace. And, too, they find their needs for current consumption less pressing, now that business in general is slower. Ab-

sent are any big needs for national defense, and yet the steelmaking capacity will be far greater than it was in the last two wars.

By next Jan. 1, the country's steelmaking capacity will be 59 per cent larger than it was when World War II started, and 42 per cent bigger than it was at the beginning of the Korean War.

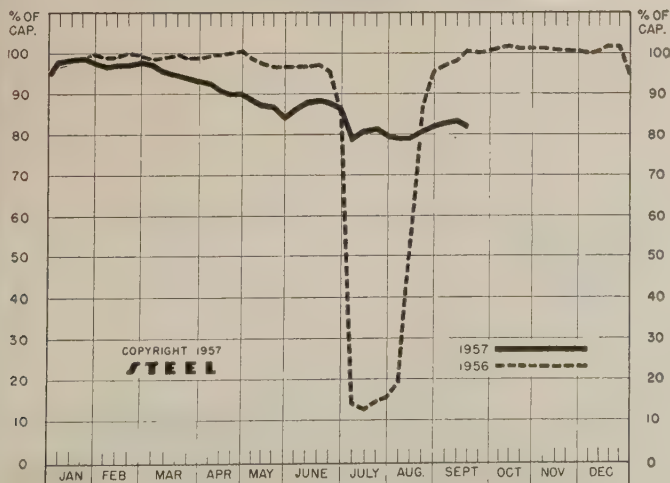
GETTING READY—The steel industry is not surprised that its capacity has exceeded current needs. It is preparing for the 1960s when substantial increases in demand are expected. By that time, family formations are expected to increase when babies born in the wave of births in the 1940s start marrying. The more families there are, the more facilities and equipment there must be to serve them. This will take steel.

In addition to preparing for the 1960s, the steel industry is providing itself with a little surplus of capacity for safety and for economy.

PRODUCTION—Current demand is sufficient to sustain ingot production in the low 80s. In the week ended Sept. 15, output of steel for ingots and castings was at 81.5 per cent of capacity—a decline of 1.5 points from the preceding week's rate.

PRICES—Steel prices are steady. U. S. Steel Corp., largest producer of tin mill products, announced it will hold the line on these products, at least until Dec. 31. Scrap prices continue to slip. In the week ended Sept. 11, STEEL's price composite on steelmaking scrap declined to \$50.17 a gross ton, a drop of \$1.66 from the preceding week's level.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

	Week Ended Sept. 15	Change	Same Week 1956	Same Week 1955
Pittsburgh	82.5	+ 2*	98.5	97.5
Chicago	85	+ 1*	102	96.5
Mid-Atlantic	85	0	98	93
Youngstown	77	- 2	105	100
Wheeling	92.5	0	98.5	97
Cleveland	81	+ 0.5*	107	98
Buffalo	100	0	107.5	105
Birmingham	85	0	95.5	95.5
New England	52	+ 2	90	86
Cincinnati	82.5	+ 1*	91	89.5
St. Louis	86.5	+ 13*	95.5	106
Detroit	97	+ 3*	97.5	94
Western	94	- 2	97	103
National Rate ..	81.5	- 1.5	100.5	95.5

INGOT PRODUCTION†

	Week Ended Sept. 15	Week Ago	Month Ago	Year Ago
INDEX	132.3†	129	128.4	154.2
(1947-1949=100)				
NET TONS	2,126†	2,073	2,062	2,477
(In thousands)				

*Change from preceding week's revised rate.

†Estimated. ‡Amer. Iron & Steel Institute.

Weekly capacity (net tons): 2,559,490 in 1957; 2,461,893 in 1956; 2,413,278 in 1955.



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These dynamic and expanding times call for sales methods that measure up to the modern buying market. A tremendous amount of money is spent by industry for needed goods and services—over \$135 million each business day.

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Russell, Burdsall & Ward Bolt & Nut Co.

Fastener Outlook Is Good

Dollar volume will set a record, but tonnage will drop beneath the 1956 level. Auto and appliance orders are picking up. High strength bolts gain acceptance

THIS YEAR, makers of fasteners are setting their sights on the best dollar sales ever recorded. Through July—the latest month for which industry statistics are available—sales were 7 per cent ahead of the 1956 pace. All manufacturers contacted by STEEL unanimously agreed that the fourth quarter should be good enough to hold the advantage.

Tonnage Down — But that's likely to be the only record the industry will set this year. Tonnage at the end of seven months

was off 7 per cent from the 1956 level, and there's not much chance of making up the loss.

Among major producers, the pace in August was mixed. One says it was a tremendous month compared with July and past summer months. Another says: "August was a low month, the third quarter is lousy. It would take a whale of a big fourth quarter to make up for it."

While the next quarter will be good, it probably won't be that good. Right now, the most encour-

aging sign is the pickup in orders from automakers. One producer remarks that advance orders in August were the heaviest he had ever received from the auto industry. Releases are coming in slow for September, but as model changeover progresses so will shipments of nuts, bolts, and screws. Appliance customers are showing "some quickening of the pulse," as one sales manager puts it. Another notes: "Now that appliance producers are making new model introductions in late summer and fall, it has made a noticeable difference in our fourth quarter business."

Price Makes Difference — Two factors account for the gap between this and last year's tonnage and dollar volume. Most of the decrease in shipments has been concentrated in the smaller, standard items, while the larger, more expensive sizes have held up well.

For instance, one producer reports that sales of high strength bolts through July were 133 per cent of the comparable 1956 total. This is a heat-treated item and carries a higher unit price. Another says that sales of large fasteners to the railroad industry for the car building program are good and getting better, but so far this year his shipments of smaller size bolts and screws to the appliance industry have been down. But the big factor in improved dollar sales is higher prices.

"In the past year, we've had two general increases," says the vice president of a midwestern company. "The first was the result of extra increases on steel last January. The second and larger increase was the result of both higher cost of materials and labor at midyear. We passed the point some time ago where we could absorb such increases. If costs go up again this year, so will our prices. I would say that these increases have accounted for almost all the improved sales position of our company."

Look Ahead—Next year should be at least as good as this one, perhaps better. While the standard sizes are still the bread and butter of the fastener industry, items like high strength bolts are the jam.

"In two years, I expect high

strength bolts to be the primary method of constructing large commercial buildings and bridges," reports the sales manager of an eastern producer. It is reported that 1.02 million of these bolts were used in building the Mackinac bridge in Michigan. Practically all large cities accept bolted construction; architects and engineers are specifying it to a far greater extent today than they did even a year ago.

The government's road building program also should provide a good market in 1958. So far this year, orders from makers of road building equipment have been disappointing because construction of roads under the program has been slow in starting. By spring of next year, there should be a pickup, fastener producers feel. Also due for a pickup is the farm implement market.

"This has been in a depressed condition for about three years," says one fastener sales executive. "With farm income rising, we expect it to come alive in 1958." Railroad car builders, still working on a heavy backlog, should continue active in 1958, especially if the

supply of structurals and plates continues to ease. But one large car builder has told his fastener supplier to expect some declines in orders by next spring if orders for new cars do not pick up.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 203 & 204

"Improvement in automotive ordering of hot and cold-rolled sheets is now well established."

That's the way a Pittsburgh area sheetmaker describes the current sheet market situation. This producer thinks production will attain a near-capacity pace late in the fourth quarter.

But other district interests express doubt that auto builders' purchases will support sheet mill operations above 85 per cent in the closing quarter.

At Chicago, cold-rolled orders are coming to the mills in good volume, some commitments calling for shipments in the last two months of the year. Automotive business currently is predominant in the area, but miscellaneous requirements also are noticeably improved.

One midwestern cold-rolled sheetmaker is practically sold out for October and is convinced it will have full mill operations over the remainder of the year.

The appliance industry continues to specify tonnage, but volume is little changed from the recent low level. Both auto builders and appliance manufacturers are operating on relatively low inventories. So long as prompt shipment tonnage is available they see no danger of being caught with short supplies.

Hot-rolled demand is following the general pattern of cold rolled. But the upturn in hot rolled in the Midwest is noticeably smaller than for cold rolled. The auto influence is largely behind improved demand.

Galvanized sheets are doing better than some producers had anticipated. Mill operations continue below capacity, chiefly because of increased productive facilities. Electrical sheet needs are off, reflecting curtailments in home appliances. For the same reason, orders for enameling sheets are disappointing. Some pickup on appliance account is expected as pro-

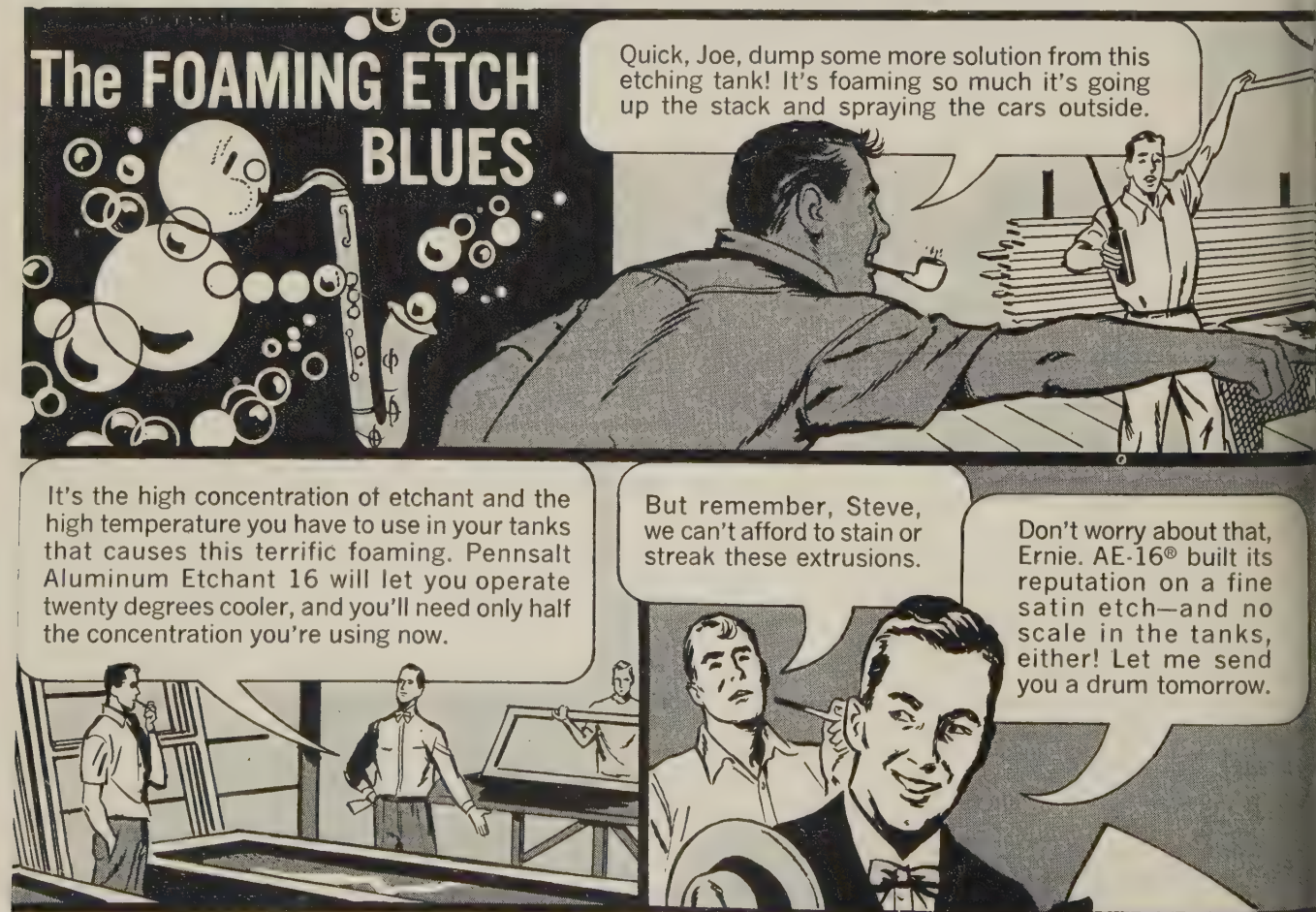
The FOAMING ETCH BLUES

Quick, Joe, dump some more solution from this etching tank! It's foaming so much it's going up the stack and spraying the cars outside.

It's the high concentration of etchant and the high temperature you have to use in your tanks that causes this terrific foaming. Pennsalt Aluminum Etchant 16 will let you operate twenty degrees cooler, and you'll need only half the concentration you're using now.

But remember, Steve, we can't afford to stain or streak these extrusions.

Don't worry about that, Ernie. AE-16® built its reputation on a fine satin etch—and no scale in the tanks, either! Let me send you a drum tomorrow.



action for the Christmas rush accelerates.

Wire . . .

Wire Prices, Pages 204 & 205

Wire orders are up slightly but not enough to materially alter the overall market picture. Prompt shipments are available on most items, and consumers are not doing much in the way of forward buying. Some slight pickup in automotive requirements is noted, but the lull in demand is not of major proportions. Demand for wire rods is reported a little more active.

Steel Bars . . .

Bar Prices, Page 202

Carbon bar sales volume continues disappointing at most plants, but the general market situation appears mixed and suppliers are pinning hopes for an active fourth quarter on a spurt in automotive requirements.

Pittsburgh area mills report hot-rolled demand picked up at the opening of this month, then lapsed. They now think September volume will be no greater over-all than

August's. One less day in September is a factor.

District mills say there is no sign of a significant upswing in demand. An October pickup is expected, but sellers say specifying for that delivery should be showing up by now. Users appear to be continuing to order on short leadtime. This includes auto builders.

New England consumers' orders for hot-rolled bars are reported close to 20 per cent over the third quarter low mark. A substantial part of the larger business is for October delivery.

Demand for cold-finished bars continues at about the August level. Users seem to be depending on producers' stock lists for prompt deliveries. A wide range of sizes and grades can be had on short notice at most market centers.

The cold drawers are limiting their purchases of hot bars. Some converters (in New England) are operating several points below the national average. An exception to the dullness in the cold-drawn market is the leaded carbon grade, which is moving steadily. Alloy

bars are sluggish with aircraft requirements off.

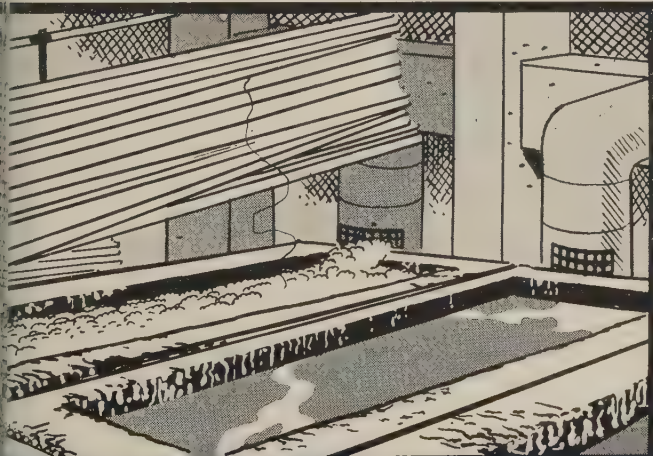
Chicago district sellers say demand for bars has not picked up to the extent cold-rolled sheets have as a result of automotive buying. They think an upturn will come shortly as new car production accelerates. Some improvement in leaded bars is noted in the district, largely on auto account.

Tin Plate . . .

Tin Plate Prices, Page 204

Changes in tin plate pricing, announced last week by U. S. Steel Corp. and its general operating divisions (Columbia-Geneva Steel and Tennessee Coal & Iron), are being considered by other tin plate makers.

U. S. Steel is continuing its current mill price bases and lists of extras and deductions on tin plate (electrolytic and hotdipped), black plate, and terne plate through Dec. 31. It has been the custom of the corporation to announce prices on its tin mill products to apply during six-month periods. Effective Jan. 1, 1958, it will discontinue that practice and will



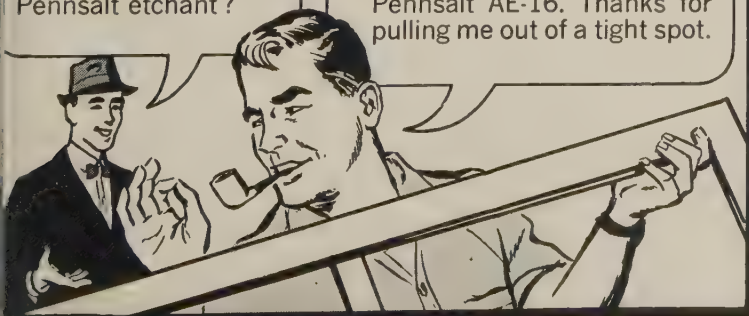
You know, Ernie, while Steve Choren from Pennsalt was in yesterday to adjust our phosphating cycle, he looked this over and thought he had the answer.



Let's get him here fast.

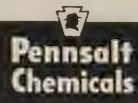
MONTH LATER...

Well, Ernie, how did you make out with the Pennsalt etchant?



Fine, Steve! No more of that annoying foam, no more scale problem in the tanks, and we're getting a fast, clean etch with Pennsalt AE-16. Thanks for pulling me out of a tight spot.

No matter what the metal or the problem, take advantage of Pennsalt's wealth of know-how in metalworking chemistry. Call your Pennsalt salesman or send the coupon to get "A BETTER START FOR YOUR FINISH."



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announce price revisions not less than 35 days prior to their effective date. Policy on the price in effect at time of shipment continues.

Tin plate suppliers report strong shipments this month. Orders for fourth quarter are less encouraging; demand from can manufacturers is off. Drought and high inventories are serving to intensify the seasonal slack.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 202

Reinforcing bar fabricators' backlogs are slipping. Order completions exceed new bookings, which is normal for the season. Shipments are heavy as work is resumed following ending of the recent cement strike. Building and road construction jobs that were held up are going ahead at full speed.

Pacific Northwest bar rollers' backlogs are off, but they are operating steadily. Recent district placements have been in small lots, but total volume is fair. Bids are in for 500 tons of bars for Washington (state) road projects;

an additional 250 tons are involved in bids called for Sept. 24.

Plates . . .

Plate Prices, Page 202

Most sellers of sheared plates anticipate an active fourth quarter demand, but consumers appear to be more disposed to order on a monthly basis than has been the case for some time. Universal plates also are moving more slowly.

Suppliers of the heavy gage material expect to fill their fourth quarter order books without too much difficulty. Pittsburgh mills say demand is continuing to increase from ship and barge builders, offsetting the adverse effects of declines in railroad equipment requirements. Construction needs also continue heavy.

Light gage plates are freely available. Much material still is offered for September and October shipment by the strip mills.

On the West Coast, pipe jobs at Portland, Oreg., and Tacoma, Wash., involving 625 tons were placed last week with Portland and Seattle fabricators. The outlook

Shipments of Steel Products—July, 1957

(All grades; Net Tons)

Products	Carbon	Alloy	Stainless	Shipments Through July	
				1957	1956*
Ingots	21,904	15,255	2,557	299,725	460,380
Blooms, etc.	133,472	21,674	1,190	1,649,792	1,486,015
Tube rounds	3,013	161	—2	50,058	10,602
Skelp	11,741	—	—	99,685	113,324
Wire rods	61,118	1,007	287	597,373	694,873
Structurals	576,259	5,452	—	4,024,651	3,261,836
Steel piling	52,031	—	—	352,145	246,435
Plates	738,225	49,890	3,608	5,876,734	4,790,751
Rails (standard)	107,176	—	—	848,119	724,690
Rails (other)	8,248	—	—	54,401	66,792
Joint bars	8,319	—	—	60,164	56,508
Tie plates	17,723	—	—	185,849	203,648
Track spikes	5,936	—	—	54,790	70,604
Wheels	28,952	39	—	225,753	225,774
Axles	15,440	15	—	124,257	108,132
Bars—hot rolled	392,012	93,854	3,627	4,834,222	5,628,231
Bars—reinforcing	171,793	—7	—	1,506,085	1,544,621
Bars—cold drawn	67,053	13,655	3,526	831,468	1,191,620
Tool steel	878	5,156	—	62,117	87,084
Standard pipe	196,648	10	—	1,714,441	1,869,074
Oil country goods	197,533	32,178	—	1,814,620	1,684,445
Line pipe	351,768	7	—	2,531,355	2,150,421
Mech. tubing	39,257	11,912	365	498,640	645,547
Pressure tubing	21,070	6,018	2,049	268,194	236,026
Wire—drawn	162,967	2,373	2,040	1,616,163	1,994,390
Nails & staples	31,326	—	—	291,988	385,828
Barbed wire	2,896	—	—	46,080	60,495
Woven fence	11,236	—	—	157,873	208,838
Bale ties	5,561	—	—	39,045	41,817
Black plate	39,871	—	—	397,159	511,900
Tin plate—hot dipped	39,234	—	—	501,153	646,381
Tin plate—electro	380,815	—	—	3,164,095	3,188,725
Sheets—hot rolled	502,671	26,881	1,777	4,913,506	5,614,174
Sheets—cold rolled	778,255	2,603	10,503	6,918,295	8,744,079
Sheets—galvanized	167,213	34	—	1,459,274	1,928,253
Sheets—other coated	13,622	—	—	117,640	159,752
Elec. sheets & strip	3,680	37,982	—	401,200	534,907
Strip—hot rolled	76,277	1,637	525	867,777	1,170,886
Strip—cold rolled	61,155	1,186	11,761	706,975	1,073,662
Totals (1957)	5,504,348	328,972	43,813	50,162,861	53,821,525

*—Includes August because July shipments were combined with that month because of the steel strike.

Data from the American Iron & Steel Institute.

work involving plates in the Pacific Northwest is regarded with optimism by the smaller shops that are being aided by the change in the steel supply situation. They expect to be in better position to compete on pending work. Available tonnages of plates are increased in two ferries to be built at the Washington (state) Toll Bridge Authority. Bids, called for Sept. 15, are restricted to state contractors. The ferries are estimated to cost about \$2.6 million each. Phoenix Iron & Steel Co., Harborsburg, Pa., suspended operations of its 42-in. universal mill and 89-in. sheared mill for the first two weeks of September. It is operating its 126-in. sheared plate mill at capacity.

Tubular Goods . . .

Tubular Goods Prices, Page 206

Demand for tubular specialties is expected to improve in the fourth quarter. Pressure and mechanical tubing demands have been slow throughout the current contracting period. Improving requirements for standard pipe in residential construction are stimulating demand in the merchant market.

Suppliers of oil country goods anticipate fourth quarter ordering to be slower than it has been in recent quarters, but they expect to operate at capacity through the remainder of the year. Accelerated sales promotion will be required if they are to continue at capacity. Slowing down in cast iron pipe requirements is seen as the fall season nears. Public work is expected to slacken gradually. Several sizable contracts are pending in the Pacific Northwest.

Warehouse . . .

Warehouse Prices, Page 208

The upturn in business recorded by distributors was short-lived. Sales volume increased gradually a few days following the Labor Day holiday, then dropped below August level.

Fabricators are not showing any particular buying interest in any product except heavy, wide plates and wide flange beams. Sales of angles, bars, and tubular products range from moderate to good. Standard pipe sales have increased

slightly. Demand for light plates is falling gradually as that product becomes easier to obtain from mills.

Distributors' inventories are in good balance. No specifications are in short supply. Structural and heavy plates are available in most districts in sufficient quantities to satisfy requirements of the construction industry for the balance of the year.

Warehousing interests in the Pacific Northwest say that prospects for the second half are promising. The price situation in the Seattle area is firm, with published schedules generally observed. But reports from the Portland, Oreg., district indicate some price cutting.

Iron Ore . . .

Iron Ore Prices, Page 210

During August, the Pittsburgh & Conneaut Dock Co., subsidiary of U. S. Steel Corp., broke all records for iron ore unloading at its Lake Erie docks. The total was 2,165,000 gross tons, compared with the previous record of 2,119,000 tons established in July. So far this season, a total of 8,124,000 tons have been unloaded by this U. S. Steel subsidiary.

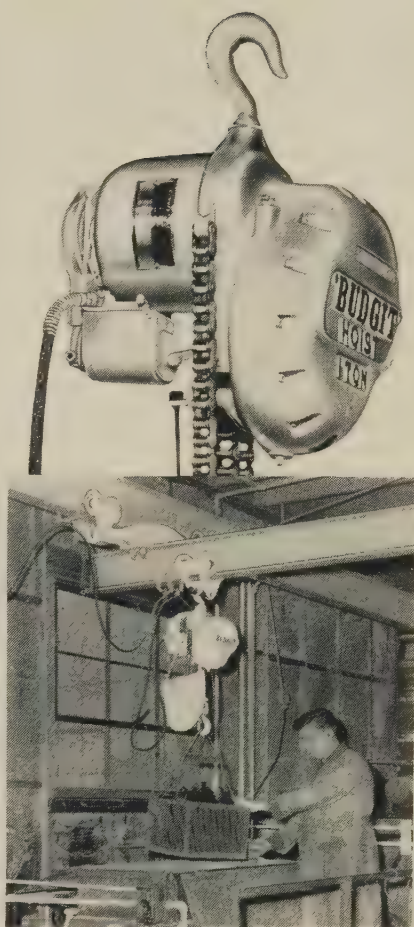
Shipments of iron ore down the Great Lakes route in August totaled 13,172,356 gross tons, reports the American Iron Ore Association. This was 5,127,328 tons more than the 8,045,028 tons moved in August a year ago. Season shipments through August total 57,695,824 tons, up 15,817,963 tons, compared with the 41,877,861 tons moved in the 1956 season through August.

Shipments of Lake Superior iron ore in the week ended Sept. 9 totaled 2,720,994 gross tons, reports the American Iron Ore Association. This was an increase of 104,707 tons, compared with the movement in the like week a year ago.

Total shipments in the 1957 navigation season to Sept. 9 were 60,990,061 tons, up 16,051,817 tons, compared with the tonnage moved to that date in 1956.

An earlier than usual layup of some lake ore vessels is expected. Bethlehem Steel recently laid up two of its freighters. It still has nine in operation.

The lake ore trade has had fa-



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avorable sailing weather this season, and vessels have been operated without strike interruptions. Pressure for winter supplies is less in evidence than it has been for several years.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 210

Beehive coke operations at Leisenring No. 2 mine of U. S. Steel Corp.'s Coal Div., will be closed down indefinitely beginning Oct. 1. Increased coke production

at the Clairton Works eliminates the need for producing beehive coke at Leisenring. One modern rebuilt byproduct coke battery went into production a week ago at the Clairton Works, and two additional batteries are scheduled to be placed in operation by the end of the year.

The Leisenring plant, founded in 1881 by the Connellsville Coke & Iron Co., was purchased by the H. C. Frick Coke Co. in 1890. The 496-oven plant continued operation until January, 1927, when pro-

duction was discontinued. The plant was rehabilitated in February, 1943, and was in operation until June, 1949. Production was resumed again in March, 1950, and the plant operated until January 1954. In December, 1955, operations were again resumed, using coal trucked in from the Leisenring No. 3 mine.

Pig Iron . . .

Pig Iron Prices, Page 208

Activity in the foundry industry is spotty and below expectations in many districts. So demand for pig iron this month is not living up to estimates.

Market interests believe it will be Oct. 1 before fourth quarter business in pig iron can be appraised. The trade is counting on improved demand from foundries to assert itself early that month.

Demand is being adversely affected by the decline in scrap prices since this development, following the recent hike in iron prices, is prompting many foundries to use more scrap than pig iron in their melts. This is substantiated by the fact that sales of cast scrap have held up well during the summer.

Auto producers are not buying castings in large volume. Auto manufacturers who buy merchant iron for their own foundries have sizable stockpiles and won't need much tonnage right away. This is especially true of General Motors' foundries.

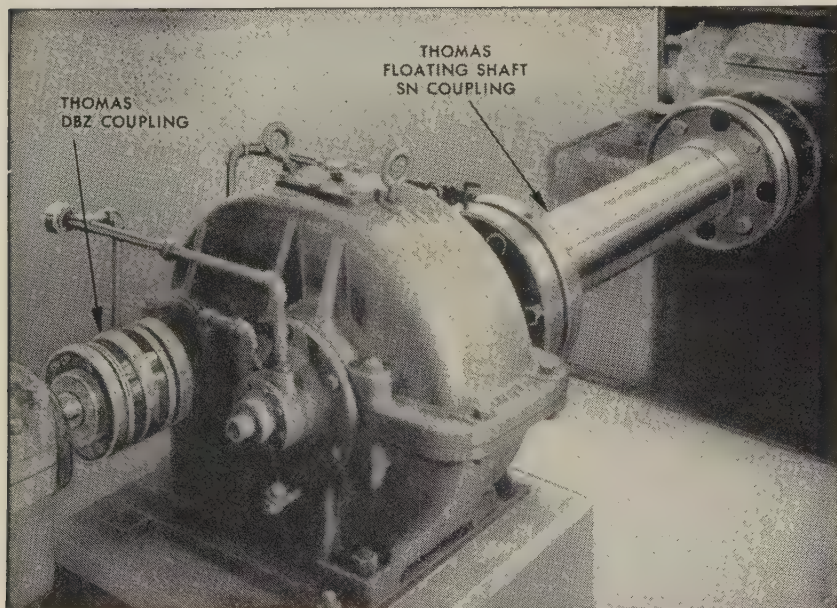
The appliance industry continues slow, and demand for castings for appliances is light. This is reflected in reduced demand for merchant iron.

In New England the situation is somewhat brighter. Shipments of iron to foundries are heavier this month, with some shops taking tonnage for the first time since spring. Jobbing shops' operating schedules are back to or slightly higher than those maintained during the first half of the year. Their order backlogs are small except those held by steel casting producers.

Most New England shops have renewed their contract agreements with Mystic Iron Works, Everett, Mass., for five years. The old contracts expired at midyear, and new

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- 3 Smooth Continuous Drive with
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- 4 Visual Inspection While
in Operation
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- 7 No Wearing Parts
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THOMAS FLEXIBLE COUPLING COMPANY
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arrangements are basically the same. Prices will be fixed quarterly, based on costs at the Verett furnace in the previous quarter.

Of the Chicago district's 43 blast furnaces, 38 are in operation. Inland Steel Co. relighted its No. 2 Indiana Harbor (Ind.) furnace Sept. 8 following relining and repairs. Late this month Inland will blow out its No. 4 furnace for relining and repairs. Wisconsin Steel Div., International Harvester Co., will bank its No. 2 furnace at South Chicago, Ill., Sept. 15.

Ferrosilicon . . .

Domestic production of silicon alloys and metal during the second quarter this year increased 5 per cent; shipments were 2 per cent lower than they were in the first quarter, reports the U. S. Bureau of Mines. Apparent consumption of shipments plus imports, minus exports was about 2 per cent below that of the first quarter.

Second quarter shipments (silicon pig iron, ferrosilicon, silicon alloys, silicon metal, and miscellaneous silicon alloys) were 7,325 tons, against 201,577 in the first quarter; imports were 5931 tons, against 4945; exports were 2 tons, against 757; apparent consumption was 202,444 tons, against 205,765 tons.

Imports of ferrosilicon in the second quarter totaled 5931 short tons containing 1112 tons of silicon, valued at \$497,000. Exports amounted to 812 tons valued at \$99,916.

Structural Shapes . . .

Structural Shape Prices, Page 202

Pressure on the structural fabricators continues to ease. Bridge work continues to be prominent in the market picture, highway construction playing a big role in overall steel demand. The trend in this area is down and demand will slacken steadily as the building season advances.

Fabricating shops continue to hold fair order backlogs. But these are shrinking as new business is not developing sufficiently to offset completions. The situation is resulting in sharper com-

petition on new work than was the case a year ago.

Improved supplies of steel are enabling fabricators to bid more actively and on a wider scale than had been their custom until comparatively recently. Wide flange sections remain scarce, but there is noticeable softening in supplies of standard structurals.

Steel is more plentiful in the Pacific Northwest than it was some time back and this is being reflected in increased competition

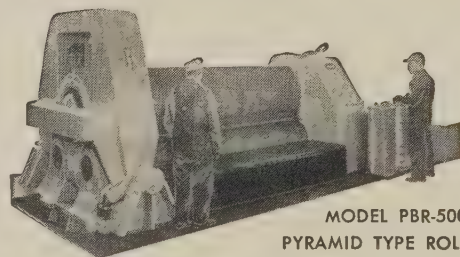
among fabricators in the area. District fabricators have fair backlogs, but new demand is definitely slower. Bethlehem Pacific Coast Steel Corp. recently booked 750 tons for a Portland, Oreg., bank building addition, and 675 tons are pending for a bridge in Rainier National Park, Washington.

Phoenix Iron & Steel Co., Phoenixville, Pa., suspended production on its structural mills for the first two weeks of this month. The company's structural fabricat-

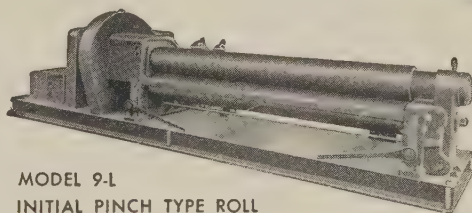
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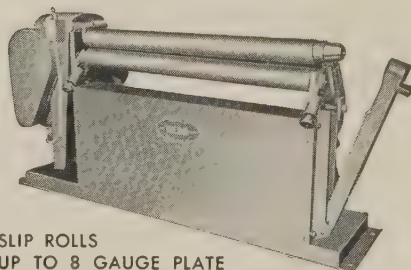
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ing shops and tube mill remained in operation.

Phoenix continues to quote structural shapes on the premium basis of \$5.50, f.o.b. mill.

New structural fabricating orders are dropping in the Midwest, partly for seasonal reasons and partly because boom demand is tapering off. Shapes and heavy plates are still in tight supply in the area, and there are pretty solid indications that condition will hold into 1958.

St. Louis Area Mills Busier

Cold-rolled sheet producers at St. Louis report improving demand as automotive business picks up in other areas. They say the withdrawal of competitors from their market is diverting more orders to them.

They are booking better volume business from nearly all types of midwest fabricators, especially farm implement manufacturers. Demand from stove and other household appliance makers continues slow, except washing machines.

Demand for strip in 1/2 to 12-in widths is showing sufficient improvement to enable St. Louis area mills to increase production. The faster tempo will be maintained from six to eight weeks on the basis of present bookings. District producers report a general pickup in demand from all classes of consumers. They predict that September's volume will be better than August's. Most mills have orders extending into October.

Completing New Tube Mill

Youngstown Sheet & Tube Co. plans to begin operations at its new seamless tube mill in the Chicago District about Oct. 1. The mill is considered one of the most modern in the industry—it will employ about 300. Sheet & Tube now has two seamless mills at its Campbell Works in Youngstown.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2500 tons, lock and dam 41, Ohio River, Louisville; bids out for December, Corps of U. S. Engineers.
750 tons, addition to the First National Bank, Portland, Oreg., to the Bethlehem Pacific

Coast Steel Corp., Seattle; Hoffman Construction Co., Portland, general contractor.
115 tons, foundry addition, Texas Electrical Steel Castings Co., Houston, to Metallic Building Co., Houston; Brown & Root Inc., Houston, general contractor.
195 tons, grade separation over Connecticut Turnpike, East Lyme, Conn., to the Bethlehem Steel Co., Bethlehem, Pa., through L. G. De Falice & Son Inc., North Haven, Conn., general contractor.
125 tons, spillway bridge, Stevenson, Conn., to Morris Wheeler & Co., Philadelphia, through United Engineers & Constructors Inc., Philadelphia.

STRUCTURAL STEEL PENDING

675 tons, 735-ft steel girder bridge, Nisqually River, Washington State, to Carl M. Halvorson Inc., Portland, Oreg., low at \$1,164,188 to the Bureau of Public Roads.
250 tons, 527-ft steel truss, Rogue River, Oreg.; Tom Lillebo, Reedsport, Oreg., low at \$243,464 to the Bureau of Public Roads.

REINFORCING BARS . . .

REINFORCING BARS PLACED

177 tons, Washington state highway project, Whatcom County, to the Soule Steel Co., Seattle; Wilder Construction Co., Bellingham, Wash., is general contractor.
170 tons, 280-ft overcrossing, Montana state project, Beaverhead County, to the Bethlehem Pacific Coast Steel Corp., Seattle; C. B. Lauch Construction Co., Great Falls, Mont., is low at \$148,617 on general contract.

REINFORCING BARS PENDING

100 tons, Washington state road projects, Pierce and Stevens Counties; bids to Olympia, Wash., Sept. 24.

PLATES . . .

PLATES PLACED

500 tons, 2-million-gal tank, Richland Highlands district, Seattle, to the Pittsburgh-Des Moines Steel Co., Seattle, low at \$270,215.
325 tons, tank and pipe, Rockwood Water District, Portland, Oreg., to Gunderson Bros. Engineering Co., Portland, Oreg.
300 tons, 36 and 24-in. water pipe, for the Port of Tacoma (Wash.), to the Hydraulic Supply Mfg. Co., Seattle, at \$110,204.
200 tons, water supply project, McChord Air Field, Washington state; general contract to Milone & Tucci, Tacoma, Wash., low at \$334,424.

PLATES PENDING

3000 tons, two 300,000-gal welded steel tanks, veterans hospital, McKinney, Tex.; bids Oct. 8, Veterans Administration, Washington.
200 tons, steel reservoir, Rockwood district, Portland, Oreg.; Gunderson Bros. Engineering Co., Portland, Oreg., is low base at \$109,200; American Pipe & Construction Co., Portland, is low on alternative bid at \$103,955.
115 tons, low-alloy, high-strength, annealed, Air Force depot, Topeka, Kans.
100 tons, steel tanks and 54,000 ft of 8 and 4-in. pipe; bids to Grays Harbor District No. 2, Montesano, Wash., Sept. 10.
Unstated, two steel ferries, estimated cost \$2.6 million each; bids restricted to state contractors, to Washington Toll Bridge Authority, Olympia, Wash., Oct. 15.

PIPE . . .

CAST IRON PIPE PENDING

500 tons, assorted sizes; bids soon to Portland, Oreg.
240 tons, three state highway bridges, Montpelier, Vt., S. V. Rossi Construction Co. Inc., Torrington, Conn., low on general contract.
200 tons, takeoff structure, Rocky Reach project; bids to PUD No. 1, Wenatchee, Wash., Sept. 27.
100 tons, bridge near Forks, Wash., for the Bureau of Public Roads; Poole, McGonigle & Dick, Portland, Oreg., reported low on subcontract.

Imported Steel

Prices per 100 lbs. (except where otherwise noted) landed, including customs duty, but no other taxes.

	Atlantic & Gulf Coast	West Coast	Vancouver	Montreal
Deformed Bars (3/8" Dia. incl. all extras) . . .	\$6.78	\$7.01	\$6.76	\$6.44
Merchant Bars (1/2" Round incl. all extras) . . .	7.62	7.85	7.48	7.22
Bands (1"x1/2"x20" incl. all extras)	7.76	7.98	7.65	7.38
Angles (2"x2"x1/4" incl. all extras)	6.57	6.75	6.99	6.69
Beams & Channels (base)	6.82	7.00	7.24	6.94
Furring Channels (C.R. 3/4", per 1000')	26.62	27.77	....	....
Barbed Wire (per 82 lb. net reel)	6.95	7.40	7.75	7.80
Nails (bright, common, 20d and heavier)	8.38	8.58	9.07	8.99
Larssen Sheet Piling (section II, new, incl. size extra)	7.80	8.10	8.10	7.80
Wire, Manufacturer's, bright, low C, (11 1/2 ga.) .	7.38	7.52	8.52	8.52
Wire, galvanized, low C, (11 1/2 ga.)	8.01	8.15	9.42	9.42
Wire, Merchant quality, bl. ann., (10 ga.)	7.60	7.75	8.78	8.78
Rope Wire (.045", 247,000 PSI, incl. extras) . . .	13.60	13.75	13.00	13.00
Wire, fine and weaving, low C, (20 ga.)	10.66	10.80	10.17	12.17
Tie Wire, autom. baler (14G, 97 lbs. net)	9.58	9.73	9.64	9.54
Merchant Pipe (1/2" galv. T & C, per 100')	8.48	8.83	....	....
Casing (5 1/2", 15.5 J55, T & C, per 100')	194.00	199.00	....	....
Tubing (2 3/8", 6.4 J55, EUE, per 100')	103.00	104.00	....	....
Forged R. Turn. Bars, C-1035 (from 10" di.) . .	14.00	14.23	14.00	13.74
Ask prices on: Bulb tees, bolts and nuts, manganese steel plates and shapes, welded wire reinforcing mesh and hardware cloth, boiler tubes, A-335-P11 pressure pipe.				

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Wire Rod, Merchant Bars. WESTFAELISCHE UNION Europe's largest Wire Mill—All types drawn Wire and Wire Products—Nails, Barbwire, Wire Rope, Prestress Concrete Wire and Strand. PHOENIX RHEINROHR Europe's largest Pipe Mill—Pipe, Tubing, Flanges, Welding Fittings, Precision Tubes, Tubular Masts.

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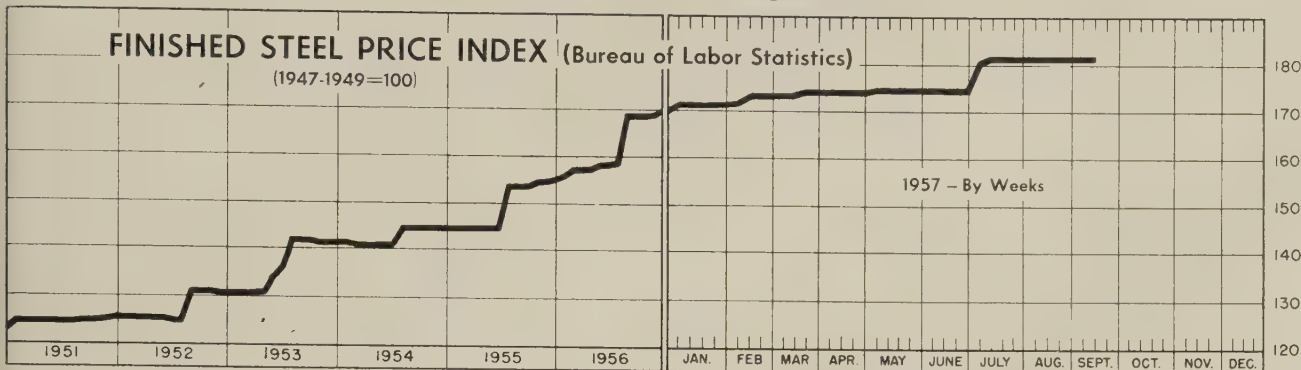
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Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

(1947-1949=100)



Sept. 10, 1957

Week Ago

Month Ago

Aug. Avg.

Year Ago

181.5

181.5

181.5

181.5

168.6

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Sept. 10

Prices include mill base prices and typical extras and deductions. Units are per 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Steel, Standard, No. 1...	\$5.600	Bars, Reinforcing	6.210
Steel, Light, 40 lb	7.067	Bars, C.F., Carbon	10.360
Steel, Plates	6.600	Bars, C.F., Alloy	13.875
Steel, Railway	9.825	Bars, C.F., Stainless, 302 (lb)	0.553
Steel, Freight Car, 33 (per wheel)	60.000	Sheets, H.R., Carbon	6.192
Steel, Carbon	6.150	Sheets, C.R., Carbon	7.089
Steel, Structural Shapes	5.942	Sheets, Galvanized	8.220
Steel, Tool Steel, Carbon (lb)	0.480	Sheets, C.R., Stainless, 302 (lb)	0.688
Steel, Tool Steel, Alloy, Oil Hardening Die (lb)	0.585	Sheets, Electrical	12.025
Steel, Tool Steel, H.R., Alloy, High Speed, W 75, Cr 4.5, V 2.1, Mo 5, C 0.60 (lb)	1.274	Strip, C.R., Carbon	9.193
Steel, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.769	Strip, C.R., Stainless, 430 (lb)	0.493
Steel, H.R., Alloy	10.525	Strip, H.R., Carbon	6.245
Steel, H.R., Stainless, 303 (lb)	0.525	Pipe, Black, Butt-weld (100 ft)	19.814
Steel, H.R., Carbon	6.425	Pipe, Galv., Butt-weld (100 ft)	23.264
		Pipe, Line (100 ft)	199.023
		Casing, Oil Well, Carbon (100 ft)	194.499
		Casing, Oil Well, Alloy (100 ft)	304.610

Tubes, Boiler (100 ft) ..	49.130	Black Plate, Canmaking Quality (95 lb base box) ..	7.583
Tubing, Mechanical, Carbon (100 ft)	24.953	Wire, Drawn, Carbon ...	10.225
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608	Wire, Drawn, Stainless, 430 (lb)	0.653
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783	Bale Ties (bundles)	7.967
Tin Plate, Electrolytic 0.25 lb (95 lb base box) ..	8.483	Nails, Wire, 8d Common ..	9.828
		Wire, Barbed (80-rod spool) ..	8.719
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Sept. 11 1957	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)...	239.15	239.15	239.15	225.71	181.40
Index in cents per lb	6.479	6.479	6.479	6.114	4.914

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	\$146.19	\$146.19	\$146.19	\$137.75	\$111.66
No. 2 Fdry Pig Iron, GT ..	66.49	66.49	66.49	62.63	55.04
Basic Pig Iron, GT	65.99	65.99	65.99	62.18	54.66
Malleable Pig Iron, GT ...	67.27	67.27	67.27	63.41	55.77
Steelmaking Scrap, GT	50.17	51.83	53.83	59.67	43.00

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	Sept. 11 1957	Week Ago	Month Ago	Year Ago	5 Yr Ago
Steel, H.R., Pittsburgh	5.425	5.425	5.425	5.075	3.95
Steel, H.R., Chicago	5.425	5.425	5.425	5.075	3.95
Steel, H.R., deld., Philadelphia ..	5.725	5.725	5.715	4.93	4.502
Steel, C.F., Pittsburgh	7.30*	7.30*	7.30*	6.85*	4.925
Steel, Std., Pittsburgh ...	5.275	5.275	5.275	5.00	3.85
Steel, Std., Chicago	5.275	5.275	5.275	5.00	3.85
Steel, deld., Philadelphia ..	5.545	5.545	5.525	5.00	4.13
Steel, Pittsburgh	5.10	5.10	5.10	4.85	3.90
Steel, Chicago	5.10	5.10	5.10	4.85	3.90
Steel, Coatesville, Pa.	5.50	5.50	5.50	5.25	4.35
Steel, Sparrows Point, Md.	5.10	5.10	5.10	4.85	3.90
Steel, Claymont, Del.	5.70	5.70	5.70	5.35	4.35
Steel, H.R., Pittsburgh ...	4.925	4.925	4.925	4.675	3.775
Steel, H.R., Chicago	4.925	4.925	4.925	4.675	3.775
Steel, C.R., Pittsburgh	6.05	6.05	6.05	5.75	4.575
Steel, C.R., Chicago	6.05	6.05	6.05	5.75	4.575
Steel, C.R., Detroit	6.05-6.15	6.05-6.15	6.05-6.15	5.75-5.85	4.775
Steel, Galv., Pittsburgh ..	6.60	6.60	6.60	6.30	5.075
Steel, H.R., Pittsburgh	4.925	4.925	4.925	4.675	3.75-4.00
Steel, H.R., Chicago	4.925	4.925	4.925	4.675	3.725
Steel, C.R., Pittsburgh	7.15	7.15	7.15	6.85	5.10-5.80
Steel, C.R., Chicago	7.15	7.15	7.15	6.85	5.35
Steel, C.R., Detroit	7.25	7.25	7.25	6.95	5.30-5.60
Steel, Basic, Pittsburgh	7.65	7.65	7.65	7.20	4.85-5.225
Steel, Wire, Pittsburgh	8.95	8.95	8.95	8.35	5.90-6.35
Plate (1.50 lb) box, Pitts. ...	\$10.30	\$10.30	\$10.30	\$9.85	\$8.95

Including 0.35c for special quality.

UNFINISHED STEEL

Steel, forging, Pitts. (NT) ..	\$96.00	\$96.00	\$96.00	\$91.50	\$70.50
Steel, rods, 3/4"-5/8" Pitts. ...	6.15	6.15	6.15	5.80	4.325

PIG IRON, Gross Ton

	Sept. 11 1957	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts	\$67.00	\$67.00	\$67.00	\$63.50	\$55.50
Basic, Valley	66.00	66.00	66.00	62.50	54.50
Basic, deld., Phila.	70.01	70.01	69.88	66.26	59.25
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	63.00	55.00
No. 2 Fdry, Chicago	66.50	66.50	66.50	63.00	55.00
No. 2 Fdry, deld., Phila. .	70.51	70.51	70.38	66.76	59.75
No. 2 Fdry, Birm.	62.50	62.50	62.50	59.00	51.38
No. 2 Fdry (Birm.) deld. Cin.	70.20	70.20	70.20	66.70	58.93
Malleable, Valley	66.50	66.50	66.50	63.00	55.00
Malleable, Chicago	66.50	66.50	66.50	63.00	55.00
Ferromanganese, Duquesne.	255.00†	255.00†	255.00†	215.00†	228.00*

†74-76% Mn, net ton. *75-82% Mn, gross ton, Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pittsburgh ..	\$51.50	\$53.50	\$55.00	\$58.50	\$44.00
No. 1 Heavy melt, E. Pa. ...	48.00	51.00	52.00	59.00	41.50
No. 1 Heavy Melt, Chicago.	51.00	51.00	54.00	61.50	42.50
No. 1 Heavy Melt, Valley ..	52.50	54.50	55.50	65.50	44.00
No. 1 Heavy Melt, Cleve. ...	49.50	51.50	52.50	63.00	43.00
No. 1 Heavy Melt, Buffalo.	47.50	49.50	49.50	56.50	43.00
Rails, Rerolling, Chicago ..	65.50	67.50	76.50	84.50	52.50
No. 1 Cast, Chicago	44.50	44.50	47.50	53.50	50.00

COKE, Net Ton

Beehive, Furn., Connlsvl. ...	\$15.25	\$15.25	\$15.25	\$14.50	\$14.75
Beehive, Fdry., Connlsvl. ...	18.25	18.25	18.25	17.50	17.00

Steel Prices

Mill prices as reported to STEEL, Sept. 11, cents per pound except as otherwise noted. *Changes shown in italics.*
Code numbers following mill points indicate producing company. Key to producers, page 203; to footnotes, page 205.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall, Pa. U5\$73.50

INGOTS, Alloy (NT)

Detroit S41\$77.00
Farrell, Pa. S377.00
Lowellville, O. S377.00
Midland, Pa. C1877.00
Munhall, Pa. U577.00
Sharon, Pa. S377.00

BILLETS, BLOOMS & SLABS

Carbon, Re-rolling (NT)

Bessemer, Pa. U5\$77.50
Bridgeport, Conn. N1980.50
Buffalo R277.50
Clairton, Pa. U577.50
Ensley, Ala. T277.50
Fairfield, Ala. T277.50
Fontana, Calif. K188.00
Gary, Ind. U577.50
Johnstown, Pa. B277.50
Lackawanna, N.Y. B277.50
Munhall, Pa. U577.50
S. Chicago, Ill. R2, U577.50
S. Duquesne, Pa. U577.50
Sterling, Ill. N1577.50
Youngstown R277.50

Carbon, Forging (NT)

Bessemer, Pa. U5\$96.00
Bridgeport, Conn. N19101.00
Buffalo R296.00
Canton, O. R298.50
Clairton, Pa. U596.00
Conshohocken, Pa. A3101.00
Ensley, Ala. T296.00
Fairfield, Ala. T296.00
Fontana, Calif. K1105.50
Gary, Ind. U596.00
Geneva, Utah C1196.00
Houston S5101.00
Johnstown, Pa. B296.00
Lackawanna, N.Y. B296.00
Los Angeles B3105.50
Midland, Pa. C1896.00
Munhall, Pa. U596.00
Seattle B3109.50
Sharon, Pa. S396.00
S. Chicago R2, U5, W1496.00
S. Duquesne, Pa. U596.00
San Francisco B3105.50
Warren, O. C1796.00

Alloy, Forging (NT)

Bethlehem, Pa. B2\$114.00
Bridgeport, Conn. N19114.00
Buffalo R2114.00
Canton, O. R2, T7114.00
Conshohocken, Pa. A3121.00
Detroit S41114.00
Farrell, Pa. S3114.00
Fontana, Calif. K1135.00
Gary, Ind. U5114.00
Houston S5119.00
Ind. Harbor Ind. Y1114.00
Johnstown, Pa. B2114.00
Lackawanna, N.Y. B2114.00
Los Angeles B3134.00
Lowellville, O. S3114.00
Massillon, O. R2114.00
Midland, Pa. C18114.00
Munhall, Pa. U5114.00
Sharon, Pa. S3114.00
S. Chicago R2, U5, W14114.00
S. Duquesne, Pa. U5114.00
Struthers, O. Y1114.00
Warren, O. C17114.00

ROUNDS, SEAMLESS TUBE (NT)

Bridgeport, Conn. N19\$122.50
Buffalo R2117.50
Canton, O. R2120.00
Cleveland, O. R2117.50
Gary, Ind. U5117.50
S. Chicago, Ill. R2, W14117.50
S. Duquesne, Pa. U5117.50
Warren, O. C17117.50

SKELP

Alliquippa, Pa. J55.075
Munhall, Pa. U54.875
Warren, O. R24.875
Youngstown R2, U54.875

WIRE RODS

Alabama City, Ala. R26.15
Alliquippa, Pa. J56.15
Alton, Ill. L16.35
Buffalo W126.15
Cleveland A76.15
Donora, Pa. A76.15
Fairfield, Ala. T26.15
Houston S56.40
Indiana Harbor Ind. Y16.15
Johnstown, Pa. B26.15
Joliet Ill. A76.15
Kansas City, Mo. S56.40
Kokomo, Ind. C166.25
Los Angeles B36.95
Minnequa, Colo. C106.40

Monessen, Pa. P176.15
N. Tonawanda, N.Y. B116.15
Pittsburgh, Calif. C116.95
Portsmouth, O. P126.15
Roebeling, N.J. R56.25
S. Chicago, Ill. R26.15
Sparrows Point, Md. B26.25
Sterling, Ill. (1) N156.15
Sterling, Ill. N156.25
Struthers, O. Y16.15
Worcester, Mass. A76.45

STRUCTURALS

Carbon Steel Std. Shapes

Ala. City, Ala. R25.275
Atlanta A115.475
Alliquippa, Pa. J55.275
Bessemer, Ala. T25.275
Bethlehem, Pa. B25.325
Birmingham C155.275
Clairton, Pa. U55.275
Fairfield, Ala. T25.275
Fontana, Calif. K16.075
Gary, Ind. U55.275
Geneva, Utah C115.275
Houston S55.375
Ind. Harbor Ind. I-25.275
Johnstown, Pa. B25.325
Joliet, Ill. P225.275
Kansas City, Mo. S55.375
Lackawanna, N.Y. B25.325
Los Angeles B35.975
Minnequa, Colo. C105.575
Munhall, Pa. U55.275
Niles, Calif. P15.925
Phoenixville, Pa. P45.50
Portland, Ore. O46.025
Seattle B36.025
S. Chicago, Ill. U5, W145.275
S. San Francisco B35.925
Sterling, Ill. N155.275
Torrance, Calif. C115.975
Weirton, W. Va. W65.275

Wide Flange

Bethlehem, Pa. B25.325
Clairton, Pa. U55.275
Fontana, Calif. K16.225
Indiana Harbor Ind. I-25.525
Lackawanna, N.Y. B25.325
Munhall, Pa. U55.275
Phoenixville, Pa. P45.50
S. Chicago, Ill. U55.275

Alloy Std. Shapes

Alliquippa, Pa. J56.55
Clairton, Pa. U56.55
Gary, Ind. U56.55
Houston S56.65
Kansas City, Mo. S56.65
Munhall, Pa. U56.55
S. Chicago, Ill. U56.55

H.S., L.A. Std. Shapes

Alliquippa, Pa. J57.75
Bessemer, Ala. T27.75
Bethlehem, Pa. B27.80
Clairton, Pa. U57.75
Fairfield, Ala. T27.75
Fontana, Calif. K18.55
Gary, Ind. U57.75
Geneva, Utah C117.75
Houston S57.85
Ind. Harbor Ind. I-2, Y17.75
Johnstown, Pa. B27.80
Kansas City, Mo. S57.85
Lackawanna, N.Y. B27.80
Los Angeles B38.45
Munhall, Pa. U57.75
Seattle B38.50
S. Chicago, Ill. U5, W147.75
S. San Francisco B38.40
Struthers, O. Y17.75

H.S., L.A. Wide Flange

Bethlehem, Pa. B27.80
Lackawanna, N.Y. B27.80
Munhall, Pa. U57.75
S. Chicago, Ill. U57.75

PILING

BEARING PILES

Bethlehem, Pa. B25.325
Lackawanna, N.Y. B25.325
Munhall, Pa. U55.275
S. Chicago, Ill. U55.275

STEEL SHEET PILING

Lackawanna, N.Y. B26.225
Munhall, Pa. U56.225
S. Chicago, Ill. U56.225

PLATES

PLATES, Carbon Steel

Ala. City, Ala. R25.10
Alliquippa, Pa. J55.10
Ashland, Ky. (15) A105.10
Bessemer, Ala. T25.10
Clairton, Pa. U55.10
Claymont, Del. C225.70
Cleveland J5, R25.20

Coatesville, Pa. L75.50
Conshohocken, Pa. A35.20
Ecorse, Mich. G55.20
Fairfield, Ala. T25.10
Fontana, Calif. (30) K15.90
Gary, Ind. U55.10
Geneva, Utah C115.10
Granite City, Ill. G45.30
Harrisburg, Pa. P45.80
Houston S55.20
Ind. Harbor Ind. I-2, Y15.10
Johnstown, Pa. B25.10
Lackawanna, N.Y. B25.10
Lone Star, Tex. L65.45
Mansfield, O. E65.10
Minnequa, Colo. C105.95
Newport, Ky. A25.10
Pittsburgh J55.10
Riverdale, Ill. A15.10
Seattle B36.00
Sharon, Pa. S35.10
S. Chicago, Ill. U5, W145.10
Sparrows Point, Md. B25.10
Sterling, Ill. N155.10
Steubenville, O. W105.10
Warren, O. R25.10
Youngstown R2, U5, Y15.10

PLATES, Carbon Abras. Resist.

Claymont, Del. C227.35
Fontana, Calif. K17.55
Geneva, Utah C116.75
Johnstown, Pa. B27.00
Sparrows Point, Md. B27.00

PLATES, Wrought Iron

Economy, Pa. B1413.15

PLATES, H.S., L.A.

Alliquippa, Pa. J57.625
Bessemer, Ala. T27.625
Clairton, Pa. U57.625
Claymont, Del. C227.625
Cleveland J5, R27.625
Coatesville, Pa. L77.925
Conshohocken, Pa. A37.625
Ecorse, Mich. G57.725
Fairfield, Ala. T27.625
Farrell, Pa. S37.625
Fontana, Calif. (30) K18.425
Gary, Ind. U57.625
Geneva, Utah C117.625
Houston S57.725
Ind. Harbor Ind. I-2, Y17.625
Johnstown, Pa. B27.625
Lackawanna, N.Y. B27.625
Munhall, Pa. U57.625
Pittsburgh J57.625
Seattle B38.525
Sharon, Pa. S37.625
S. Chicago, Ill. U5, W147.625
Sparrows Point, Md. B27.625
Warren, O. R27.625
Youngstown U57.625

PLATES, Alloy

Alliquippa, Pa. J57.20
Claymont, Del. C227.20
Coatesville, Pa. L77.20
Farrell, Pa. S37.20
Fontana, Calif. (30) K18.00
Gary, Ind. U57.20
Houston S57.30
Ind. Harbor Ind. Y17.20
Johnstown, Pa. B27.20
Lowellville, O. S37.20
Munhall, Pa. U57.20
Newport, Ky. A27.20
Pittsburgh J57.20
Seattle B38.10
Sharon, Pa. S37.20
S. Chicago, Ill. U5, W147.20
Sparrows Point, Md. B27.20
Youngstown Y17.20

FLOOR PLATES

Cleveland J56.175
Conshohocken, Pa. A36.175
Ind. Harbor Ind. I-26.175
Munhall, Pa. U56.175
S. Chicago, Ill. U56.175

PLATES, Ingot Iron

Ashland c.l. (15) A105.35
Ashland l.c.l. (15) A105.85
Cleveland c.l. R25.85
Warren, O. c.l. R25.85

BARS

BARS, Hot-Rolled Carbon

(Merchant Quality)

Ala. City, Ala. (9) R25.425
Alliquippa, Pa. (9) J55.425
Alton Ill. L15.625
Atlanta (9) A115.625
Bessemer, Ala. (9) T25.425
Birmingham (9) C155.425
Bridgeport, Conn. (9) N195.65
Buffalo (9) R25.425

Clairton, Pa. (9) U55.425
Cleveland (9) R25.425
Ecorse, Mich. (9) G55.525
Emeryville, Calif. J78.175
Fairfield, Ala. (9) T25.175
Fairless, Pa. (9) U55.575
Fontana, Calif. (9) K16.125
Gary, Ind. (9) U55.425
Houston (9) S55.675
Ind. Harbor (9) I-2, Y15.425
Johnstown, Pa. (9) B25.425
Joliet, Ill. P225.425
Kansas City, Mo. (9) S55.675
Lackawanna (9) B25.425
Los Angeles (9) B36.125
Milton, Pa. M185.575
Minnequa, Colo. C105.875
Niles, Calif. P16.125
N. T'wanda, N.Y. (46) B115.775
Pittsburgh, Calif. (9) C116.125
Pittsburgh (9) J55.425
Portland, Ore. O46.175
Seattle B3, N146.175
S. Ch'co (9) R2, U5, W145.425
S. Duquesne, Pa. (9) U55.425
San Fran., Calif. (9) B36.175
Sterling, Ill. (1) (9) N155.425
Sterling, Ill. (9) N155.525
Struthers, O. Y15.425
Tonawanda, N.Y. B125.425
Torrance, Calif. (9) C116.125
Youngstown (9) R2, U55.425

BARS, H.R. Lead Alloy

(Including leaded extra)
Warren, O. C177.475

BARS, Hot-Rolled Alloy

Alliquippa, Pa. J56.475
Bethlehem, Pa. B26.475
Bridgeport, Conn. N196.55
Buffalo R26.475
Canton, O. R2, T76.475
Clairton, Pa. U56.475
Detroit S416.475
Ecorse, Mich. G56.575
Fairless, Pa. U56.625
Farrell, Pa. S36.475
Fontana, Calif. K17.525
Gary, Ind. U56.475
Houston S56.725
Ind. Harbor Ind. I-2, Y16.475
Johnstown, Pa. B26.475
Kansas City, Mo. S56.725
Lackawanna, N.Y. B26.475
Lowellville, O. S36.475
Los Angeles B37.525
Massillon, O. R26.475
Midland, Pa. C186.475
Pittsburgh J56.475
Sharon, Pa. S36.475
S. Chicago R2, U5, W146.475
S. Duquesne, Pa. U56.475
Struthers, O. Y16.475
Warren, O. C176.475
Youngstown U56.475

BARS & SMALL SHAPES, H.R.

High-Strength Low-Alloy

Alliquippa, Pa. J57.925
Bessemer, Ala. T27.925
Bethlehem, Pa. B27.925
Bridgeport, Conn. N197.925
Clairton, Pa. U57.925
Cleveland R27.925
Ecorse, Mich. G58.025
Fairfield, Ala. T27.925
Fontana, Calif. K18.625
Gary, Ind. U57.925
Houston S58.175
Ind. Harbor Ind. Y17.925
Johnstown, Pa. B27.925
Kansas City, Mo. S58.175
Lackawanna, N.Y. B27.925
Los Angeles B38.625
Pittsburgh J57.925
Seattle B38.625
S. Chicago, Ill. U5, W147.925
S. Duquesne, Pa. U57.925
S. San Francisco B38.675
Struthers, O. Y17.925
Youngstown U57.925

BAR STEEL ANGLES; H.R. Carbon

Bethlehem, Pa. (9) B25.575
Houston (9) S55.675
Kansas City, Mo. (9) S55.675
Lackawanna (9) B25.425
Sterling, Ill. N155.525
Tonawanda, N.Y. B125.425

BAR STEEL ANGLES; S. Shapes

Alliquippa, Pa. J55.425
Atlanta A115.625
Joliet Ill. P225.425
Niles, Calif. P16.125
Pittsburgh J55.425
Portland, Ore. O46.175
San Francisco S76.275
Seattle B36.175

BAR SHAPES, Hot-Rolled Alloy

Alliquippa, Pa. J56.55
Clairton, Pa. U56.55
Gary, Ind. U56.55
Houston S56.80
Kansas City, Mo. S56.80
Pittsburgh J56.55
Youngstown U56.55

BARS, C.F., Lead Alloy
(Including leaded extra)

Ambridge, Pa. W189.925
Beaver Falls, Pa. M129.925
Camden, N.J. P1310.10
Chicago W189.925
Cleveland C209.925
Los Angeles P2, S30
(Grade A)11.30
(Grade B)11.80
Monaca, Pa. S179.925
Newark, N.J. W1810.10
Spring City, Pa. K310.10
Warren, O. C179.925

BARS, Cold-Finished Carbon

Ambridge, Pa. W187.30
Beaver Falls, Pa. M12, R27.30
Birmingham C157.90
Bridgeport, Conn. N197.65
Buffalo B57.35
Camden, N.J. P137.75
Carnegie, Pa. C127.30
Chicago W187.30
Cleveland A7, C207.30
Detroit B5, P177.50
Detroit S417.30
Donora, Pa. A77.30
Elyria, O. W87.30
Franklin Park, Ill. N57.30
Gary, Ind. R27.30
Green Bay, Wis. F77.30
Hammond, Ind. J5, L27.30
Hartford, Conn. R27.80
Harvey, Ill. B57.30
Los Angeles P2, S308.75
Los Angeles R28.75
Mansfield, Mass. B57.85
Massillon, O. R2, R87.30
Midland, Pa. C187.30
Monaca, Pa. S177.30
Newark, N.J. W187.75
New Castle, Pa. (17) B47.30
Pittsburgh J57.30
Plymouth Mich. P57.55
Putnam, Conn. W187.85
Reading, Mass. C147.85
S. Chicago, Ill. W147.30
Spring City, Pa. K37.75
Struthers, O. Y17.30
Warren, O. C177.30
Williamson, Conn. J57.80
Waukegan, Ill. A77.30
Youngstown F3, Y17.30

BARS, Cold-Finished Carbon
(Turned and Ground)

Cumberland, Md. (5) C196.55

BARS, Cold-Finished Alloy

Ambridge, Pa. W188.775
Beaver Falls, Pa. M12, R28.775
Bethlehem, Pa. B28.775
Bridgeport, Conn. N198.925
Buffalo B58.775
Camden, N.J. P138.95
Canton, O. T78.775
Carnegie, Pa. C128.775
Chicago W188.775
Cleveland A7, C208.775
Detroit B5, P178.975
Detroit S418.775
Donora, Pa. A78.775
Elyria, O. W88.775
Franklin Park, Ill. N58.775
Gary, Ind. R28.775
Green Bay, Wis. F78.775
Hammond, Ind. J5, L28.775
Hartford, Conn. R29.075
Harvey, Ill. B58.775
Lackawanna, N.Y. B28.775
Los Angeles P2, S3010.65
Mansfield, Mass. B59.075
Massillon, O. R2, R88.775
Midland, Pa. C188.775
Monaca, Pa. S178.775
Newark, N.J. W188.95
Plymouth, Mich. P58.975
S. Chicago W148.775
Spring City, Pa. K38.95
Struthers, O. Y18.775
Warren, O. C178.775
Waukegan, Ill. A78.775
Worcester, Mass. A79.075
Youngstown F3, Y18.775

Ala. City, Ala. R2	5.425
anta A11	5.625
irmingham C15, S42	5.425
idgeport, Conn. N19	5.65
ffalo R2	5.425
veland R2	5.425
orse, Mich. G5	5.775
erlyville, Calif. J7	6.175
erville, Ala. T2	5.425
ress, Pa. U5	5.575
atana, Calif. K1	6.125
Worth, Tex. (4) (26) T4	5.875
ry, Ind. U5	5.425
uston S5	5.675
Harbor, Ind. I-2, Y1	5.425
astown, Pa. B2	5.425
et, Ill. P22	5.425
nsas City, Mo. S5	5.675
akawanna, N.Y. B2	5.425
Angles B3	6.125
ton, Pa. M18	5.575
onnequa, Colo. C16	5.875
es, Calif. P1	6.125
tsburg, Calif. C11	6.125
tsburgh J5	5.425
etland, Ore. O4	6.175
Spring, Okla. S5	5.925
ttle B3, N14	6.175
icago, Ill. R2	5.425
duesne, Pa. U5	5.425
an Francisco B3	6.175
rows Point, Md. B2	5.425
rling, Ill. (1) N15	5.425
rling, Ill. N15	5.525
uthers, O. Y1	5.425
awanda, N.Y. B12	6.00
rance, Calif. C11	6.125
ngstown R2, U5	5.425

ChicagoHts.(3) C2, I-2.5.325
ChicagoHts.(4) (44) I-2.5.425
ChicagoHts.(4) C2 .5.425
Ft. Worth, Tex. (26) T4 .5.875
Franklin, Pa. (3) F5 .5.325
Franklin, Pa. (4) F5 .5.425
JerseyShore, Pa. (4) J8 .5.30
Marion, O. (3) P11 .5.325
Tonawanda (3) R12 .5.325
Tonawanda (4) B12 .6.00
Williamsport, Pa. (3) S19 5.50

High-Strength, Low-Alloy		
Cleveland J5, R2		7.275
Conshohocken, Pa. A3		7.325
Ecorse, Mich. G5		7.325
Fairfield, Ala. T2		7.275
Fairless, Pa. U5		7.325
Farrell, Pa. S3		7.275
Fontana, Calif. K1		8.175
Gary, Ind. U5		7.275
Ind. Harbor, Ind. I-2, Y1		7.275
Irvin, Pa. U5		7.275
Lackawanna (35) B2		7.275
Munhall, Pa. U5		7.275
Pittsburgh J5		7.275
S. Chicago, Ill. U5, W14		7.275
Sharon, Pa. S3		7.275
Sparrows Point (36) B2		7.275
Warren, O. R2		7.275
Welton, W. Va. W6		7.275
Youngstown U5, Y1		7.275

High-Strength, Low-Alloy		
Cleveland J5, R2	...	8.975
Ecorse, Mich. G5	...	9.075
Fairless, Pa. U5	...	9.025
Fontana, Calif. K1	...	10.275
Gary, Ind. U5	...	8.975
Indiana Harbor, Ind. Y1	...	8.975
Irvin, Pa. U5	...	8.975
Lackawanna (37) B2	...	8.975
Pittsburgh J5	...	8.975
SparrowsPoint (38) B2	...	8.975
Warren, O. R2	...	8.975
Weirton, W. Va. W6	...	8.975
Youngstown Y1	...	8.975

Fontana, Calif. K1 . . . 7.325

SHEETS, Galvanized
High-Strength, Low-Alloy

Irvin, Pa. U5 9.725

SparrowsPt. (39) B2 . . 9.725

SHEETS, Hot-Rolled Steel
(18 Gage and Heavier)

Ashland, Ky. (8)	A10	5.175
Cleveland R2		5.675
Warren, O. R2		5.675
SHEETS, Cold-Rolled Ingot Iron		
Cleveland R2		6.80
Middletown, O. A10		6.55
Warren, O. R2		6.80

SHEETS, Cold-Rolled Ingot Iron	
Cleveland R2	6.80
Middletown, O. A10 ...	6.55
Warren, O. R2	6.80

Alabama City, Ala.	R2	6.05
Allentown, Pa.	P7	6.05
Cleveland	J5, R2	6.05
Conshohocken, Pa.	A3	6.10
Detroit	M1	6.05
Ecorse, Mich.	G5	6.15
Fairfield, Ala.	T2	6.05
Fairless, Pa.	U5	6.10
Fallsabee, W. Va.	F4	6.05
Fontana, Calif.	K1	7.30
Gary, Ind.	U5	6.05
Granite City, Ill.	G4	6.25
Ind. Harbor, Ind.	I-2, Y1	6.05
Irvine, Pa.	U5	6.05
Lackawanna, N.Y.	B2	6.05
Mansfield, O.	E6	6.05
Middletown, O.	A10	6.05
Newport, Ky.	A2	6.05
Pittsburg, Calif.	C11	7.00
Pittsburg	J5	6.05
Portsmouth, O.	P12	6.05
Sparrows Point, Md.	B2	6.05
Stuebenville, O.	W10	6.05
Warren, O.	R2	6.05
Weirton, W. Va.	W6	6.05
Yorkville, O.	W10	6.05
Youngstown	Y1	6.05

Ala.City,Ala.	R2	6.60†
Ashland,Ky.	A10	6.60†
Canton,O.	R2	6.60†
Dover,O.	R1	6.60†
Fairfield,Ala.	T2	6.60†
Gary,Ind.	U5	6.60*
GraniteCity,Ill.	G4	6.80*
Ind.Harbor,Ind.	I-2	6.60†
Irvin,Pa.	U5	6.60†
Kokomo,Ind.	C16	6.70†
MartinsFerry,O.	W10	6.60*
Middletown,O.	A10	6.60†
Pittsburg,Calif.	C11	7.35*
Pittsburg	J5	6.60†
SparrowsPt.,Md.	E2	6.60†
Warren,O.	R2	6.60†
Weirton,W.Va.	W6	6.60†

Yorkville, O. W108.413

BeechBottom, W. Va.	W10	7.00
Gary, Ind.	U5	7.00
Mansfield, O.	E6	7.00
Middletown, O.	A10	7.00
Niles, O.	M21, S3	7.00
Warren, O.	R2	7.00
Weirton, W. Va.	W6	7.00

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Chicago U8	7.56
Wendland U8	6.91
Newtown, Pa. B2	6.89
AsasCity, Mo. S5	7.03
Kawanna, N.Y. B2	7.35
Rion, O. P11	6.85
Hark, N.J. U8	6.70
Pittsburgh J5, U8	7.55
Little B3, N14	7.10
Brownstown Pt., Md. B2	7.70
Williamsport, Pa. S19	7.03
Williamsport, Pa. S19	7.00
U.S. Wrought Iron	
Philly, Pa. (S.R.) B14	14.45
Philly, Pa. (D.R.) B14	18.00
Philly, Pa. (Staybolt) B14	18.45

onomy, Pa. (S.R.) B14	14.45
onomy, Pa. (D.R.) B14	18.00
onomy (Staybolt) B14	18.45

-Key to Producers

Acme Steel Co.	C20	Cuyahoga Steel & Wire	J1	Jackson Iron & Steel Co.	O4	Oregon Steel Mills	S23	Superior Tube Co.
Acme-Newport Steel Co.	C22	Claymount Steel Products	J3	Jessop Steel Co.	P1	Pacific States Steel Corp.	S25	Stainless Welded Prod.
Alan Wood Steel Co.		Dept. Wickwire Spencer	J4	Johnson Steel & Wire Co.	P2	Pacific Tube Co.	S26	Specialty Wire Co. Inc.
Allegheny Ludlum Steel		Steel Division	J5	Jones & Laughlin Steel	P4	Phoenix Iron & Steel Co.	S30	Sierra Drawn Steel Corp.
Alloy Metal Wire Div.,	C23	Charter Wire Inc.	J6	Joslyn Mfg. & Supply		Sub. of Barium Steel	S40	Seneca Steel Service
H. K. Porter Co. Inc.	C24	G. O. Carlson Inc.	J7	Judson Steel Corp.		Corp.	S41	Stainless Steel Div.,
American Shm Steel Co.			J8	Jersey Shore Steel Co.	P5	Pilgrim Drawn Steel		J&L Steel Corp.
American Steel & Wire	D2	Detroit Steel Corp.			P6	Pittsburgh Coke & Chem.	S42	Southern Elec. Steel Co.
Div., U. S. Steel Corp.	D3	Dearborn Division	K1	Kaiser Steel Corp.	P7	Pittsburgh Steel Co.	T2	Tenn. Coal & Iron Div.
Anchor Drawn Steel Co.		Sharon Steel Corp.	K2	Keokuk Electro-Metals	P11	Pollak Steel Co.		U. S. Steel Corp.
Angell Nail & Chaplet	D4	Disston Division, H. K.	K3	Keystone Drawn Steel	P12	Portsmouth Division,	T3	Tenn. Prod. & Chem.
Armco Steel Corp.		Porter Co. Inc.	K4	Keystone Steel & Wire		Detroit Steel Corp.	T4	Texas Steel Co.
Atlantic Steel Co.	D6	Driver-Harris Co.	K7	Kenmore Metals Corp.	P13	Precision Drawn Steel	T5	Thomas Strip Division,
	D7	Dickson Weatherproof			P14	Pitts. Screw & Bolt Co.		Pittsburgh Steel Co.
		Nail Co.	L1	Laclede Steel Co.	P15	Pittsburgh Metallurgical	T6	Thompson Wire Co.
Babcock & Wilcox Co.	D8	Damascus Tube Co.	L2	LaSalle Steel Co.	P16	Page Steel & Wire Div.,	T7	Timken Roller Bearing
Bethlehem Steel Co.	D9	Wilbur B. Driver Co.	L3	Latrobe Steel Co.		Amer.Chain & Cable	T9	Tonawanda Iron Div.,
Beth. Pac. Coast Steel			L6	Lone Star Steel Co.	P17	Plymouth Steel Co.		Am. Rad. & Stan. San.
Blair Strip Steel Co.			L7	Lukens Steel Co.	P19	Pitts. Rolling Mills	T13	Tube Methods Inc.
Bliss & Laughlin Inc.	E1	Eastern Gas & Fuel Assoc.			P20	Prod. Steel Strip Corp.	T19	Techalloy Co. Inc.
Braeburn Alloy Steel	E2	Eastern Stainless Steel	M1	McLouth Steel Corp.	P22	Phoenix Mfg. Co.	U4	Universal-Cyclops Steel
Brainerd Steel Div.,	E4	Electro Metallurgical Co.	M4	Mahoning Valley Steel	P24	Phil. Steel & Wire Corp.	U5	United States Steel Corp.
Sharon Steel Corp.	E5	Elliott Bros. Steel Co.	M6	Mercer Pipe Div., Saw-	R1	Reeves Steel & Mfg. Co.	U6	U. S. Pipe & Foundry
E. & G. Brooke, Wick-	E6	Empire Steel Corp.		hill Tubular Products	R2	Republic Steel Corp.	U7	Ubrich Stainless Steels
wire Spencer Steel Div.,			M8	Mid-States Steel & Wire	R3	Rhode Island Steel Corp.	U8	U. S. Steel Supply Div.,
Colo. Fuel & Iron	F2	Firth Sterling Inc.	M12	Moltrup Steel Products	R5	Roebeling's Sons, John A.		U. S. Steel Corp.
Buffalo Bolt Co., Div.,	F3	Fitzsimmons Steel Co.	M14	McInnes Steel Co.	R6	Rome Strip Steel Co.	V2	Vanadium-Alloys Steel
Buffalo-Eclipse Corp.	F4	Follansbee Steel Corp.	M16	Mc Fine & Special. Wire	R8	Reliance Div., Eaton Mfg.	V3	Vulcan Crucible Div.,
Buffalo Steel Corp.	F5	Franklin Steel Div.,	M17	Metal Forming Corp.	R9	Rome Mfg. Co.		H. K. Porter Co. Inc.
A. M. Byers Co.	F6	Fretz-Moon Tube Co.	M18	Milton Steel Division,	R10	Rodney Metals Inc.	W1	Wallace Barnes Co.
J. Bishop & Co.	F7	Ft. Howard Steel & Wire		Merritt-Chapman & Scott	S1	Seneca Wire & Mfg. Co.	W2	Wallingford Steel Co.
	F8	Ft. Wayne Metals Inc.	M21	Mallory-Sharon	S3	Sharon Steel Corp.	W3	Washburn Wire Co.
Calstrip Steel Corp.				Titanium Corp.	S4	Sharon Tube Co.	W4	Washington Steel Corp
Calumet Steel Div.,	G4	Granite City Steel Co.	M22	Mill Strip Products Co.	S5	Sheffield Steel Div.,	W6	Weirton Steel Co.
Borg-Warner Corp.	G5	Great Lakes Steel Corp.	N1	National Standard Co.	S6	Armco Steel Corp.	W8	Western Automatic
Carpenter Steel Co.	G6	Greer Steel Co.	N2	National Supply Co.	S7	Shenago Furnace Co.		Machine Screw Co.
Cleve.Cold Rolling Mills	G8	Green River Steel Corp.	N3	National Tube Div.,	S8	Simmons Co.	W9	Wheatland Tube Co.
Colonial Steel Co.				U. S. Steel Corp.	S12	Simonds Saw & Steel Co.	W10	Wheeling Steel Corp.
Colorado Fuel & Iron	H1	Hanna Furnace Corp.	N5	Nelsen Steel & Wire Co.	S13	Spencer Wire Corp.	W12	Wickwire Spencer Steel
Columbia-Geneva Steel	H7	Helical Tube Co.	N6	New England High	S14	Standard Forgings Corp.		Div., Colo. Fuel & Iron
Columbia Steel & Shaft.				Carbon Wire Co.	S15	Standard Tube Co.	W13	Wilson Steel & Wire Co.
Columbia Tool Steel Co.				Newman-Crosby Steel	S17	Stanley Works	W14	Wisconsin Steel Div.,
Compressed Steel Shaft.	I-1	Igoe Bros. Inc.	N8	Newport Steel Corp.	S18	Superior Drawn Steel Co.		International Harvester
Connors Steel Div.,	I-2	Inland Steel Co.	N9	Northwest SteelRoll.Mill	S19	Superior Steel Corp.	W15	Woodward Iron Co.
H. K. Porter Co. Inc.	I-3	Interlake Iron Corp.	N15	Northwestern S.&W. Co.	S20	Sweet's Steel Co.	Y1	Wyckoff Steel Co.
Continental Steel Corp.	I-4	Ingersoll Steel Div.,	N19	Northeastern Steel Corp.				
Copperweld Steel Co.		Borg-Warner Corp.						
Crucible Steel Co.	I-6	Ivins, E., Steel Tube						
Cumberland Steel Co.	I-7	Indiana Steel & Wire Co.						

STRIP

STRIP, Hot-Rolled Carbon

Ala. City, Ala. (27) R2	4.925
Allentown, Pa. P7	4.925
Alton, Ill. L1	5.125
Ashland, Ky. (8) A10	4.925
Atlanta A11	5.125
Bessemer, Ala. T2	4.925
Birmingham C15	4.925
Buffalo (27) R2	4.925
Conshohocken, Pa. A3	4.975
Detroit M1	5.025
Ecorse, Mich. G5	5.025
Fairfield, Ala. T2	4.925
Fontana, Calif. K1	5.825
Gary, Ind. U5	4.925
Ind. Harbor, Ind. I-2, Y1	4.925
Johnstown, Pa. (25) B2	4.925
Lackawanna, N.Y. (25) B2	4.925
Los Angeles (25) B3	5.675
Minneapolis, Colo. C10	6.025
Pittsburgh, Calif. C11	5.675
Riverdale, Ill. A1	4.925
San Francisco S7	6.35
Seattle (25) B3	6.35
Seattle N14	6.35
Sharon, Pa. S3	4.925
S. San Francisco (25) B3	5.675
SparrowsPoint, Md. B2	4.925
Sterling, Ill. (1) N15	4.925
Sterling, Ill. N15	5.025
Torrance, Calif. C11	5.675
Warren, O. R2	4.925
Weirton, W. Va. W6	4.925
Youngstown U5	4.925

STRIP, Hot-Rolled Alloy

Carnegie, Pa. S18	8.10
Farrell, Pa. S3	8.10
Gary, Ind. U5	8.10
Houston S5	8.35
Ind. Harbor, Ind. Y1	8.10
Kansas City, Mo. S5	8.35
Los Angeles B3	9.30
Lowellville, O. S3	8.10
Newport, Ky. A2	8.10
Sharon, Pa. S3	8.10
S. Chicago, Ill. W14	8.10
Youngstown U5, Y1	8.10

STRIP, Hot-Rolled

High-Strength, Low-Alloy

Bessemer, Ala. T2	7.325
Conshohocken, Pa. A3	7.325
Ecorse, Mich. G5	7.425
Fairfield, Ala. T2	7.325
Farrell, Pa. S3	7.325
Gary, Ind. U5	7.325
Ind. Harbor, Ind. I-2, Y1	7.325
Lackawanna, N.Y. B2	7.325
Los Angeles (25) B3	8.075
Seattle (25) B3	8.325
Sharon, Pa. S3	7.325
S. Chicago, Ill. W14	7.325
S. San Francisco (25) B3	7.325
SparrowsPoint, Md. B2	7.325
Warren, O. R2	7.325
Weirton, W. Va. W6	7.325
Youngstown U5, Y1	7.325

STRIP, Hot-Rolled Ingot Iron

Ashland, Ky. (8) A10	5.175
Warren, O. R2	5.675

STRIP, Cold-Rolled Carbon

Anderson, Ind. G6	7.15
Baltimore T6	7.15
Boston T6	7.70
Buffalo S40	7.15
Cleveland A7, J5	7.15
Conshohocken, Pa. A3	7.20
Dearborn, Mich. D3	7.25
Detroit D2, M1, P20	7.25
Dover, O. G6	7.15
Ecorse, Mich. G5	7.25
Evanston, Ill. M22	7.25
Follansbee, W. Va. F4	7.15
Fontana, Calif. K1	9.00
Franklin Park, Ill. T6	7.25
Ind. Harbor, Ind. Y1	7.15
Indianapolis J5	7.30
Los Angeles J5	9.05
Los Angeles C1	9.20
New Bedford, Mass. R10	7.60
New Britain (10) S15	7.15
New Castle, Pa. B4, E5	7.15
New Haven, Conn. D2	7.60
New Kensington, Pa. A6	7.15
Pawtucket, R.I. R3	7.80
Pawtucket, R.I. N8	7.70
Philadelphia (45) P24	7.70
Pittsburgh J5	7.15
Riverdale, Ill. A1	7.25
Rome, N.Y. (32) R6	7.15
Sharon, Pa. S3	7.15
Trenton, N.J. (31) R5	8.60
Wallingford, Conn. W2	7.60
Warren, O. R2, T5	7.15
Weirton, W. Va. W6	7.15
Worcester, Mass. A7	7.70
Youngstown J5, Y1	7.15

STRIP, Cold-Rolled Alloy

Boston T6	15.40
Carnegie, Pa. S18	15.05
Cleveland A7	15.25
Dover, O. G6	15.05
Farrell, Pa. S3	15.05
Franklin Park, Ill. T6	15.05
Harrison, N.J. C18	15.05
Indianapolis J5	15.20
Lowellville, O. S3	15.05
Pawtucket, R.I. N8	15.40
Riverdale, Ill. A1	15.05
Sharon, Pa. S3	15.05
Worcester, Mass. A7	15.55
Youngstown J5	15.05

STRIP, Cold-Rolled

High-Strength, Low-Alloy

Cleveland A7	10.45
Dearborn, Mich. D3	10.60
Dover, O. G6	10.45
Ecorse, Mich. G5	10.55
Farrell, Pa. S3	10.50
Ind. Harbor, Ind. Y1	10.65
Sharon, Pa. S3	10.50
Warren, O. R2	10.45

STRIP, Cold-Finished

Spring Steel (Annealed)

Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. W1	9.50	10.70	12.90	15.90	18.85
Carnegie, Pa. S18	8.95	10.40	12.60	15.60	18.55
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn, Mich. D3	9.05	10.50	12.70	15.70	18.85
Detroit D2	9.05	10.50	12.70	15.70	18.85
Dover, O. G6	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. M22	8.95	10.40	12.60	15.60	18.55
Fostoria, O. S1	10.05	11.15	13.10	16.10	19.30
Franklin Park, Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison, N.J. C18	9.10	10.55	12.60	15.60	18.55
Indianapolis J5	11.15	12.60	14.80	17.80	19.30
Los Angeles C1	11.15	12.60	14.80	17.80	19.30
Los Angeles J5	8.95	10.40	12.60	15.60	18.55
New Britain, Conn. (10) S15	8.95	10.40	12.60	15.60	18.55
New Castle, Pa. B4, E5	9.40	10.70	12.90	15.90	18.85
New Haven, Conn. D2	8.95	10.40	12.60	15.60	18.55
New Kensington, Pa. A6	9.10	10.55	12.60	15.60	18.55
New York W3	9.10	10.55	12.60	15.60	18.55
Pawtucket, R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome, N.Y. (32) R6	8.95	10.40	12.60	15.60	18.55
Sharon, Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton, N.J. R5	9.10	10.55	12.60	15.60	18.55
Wallingford, Conn. W2	9.40	10.70	12.90	15.90	18.85
Warren, O. T5	8.95	10.40	12.60	15.60	18.55
Worcester, Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)

Bristol, Conn. W1	18.10	21.95	26.30
Buffalo W12	18.10	21.95	26.30
Fostoria, O. S1	18.30	22.15	26.30
Franklin Park, Ill. T6	18.45	22.30	26.65
Harrison, N.J. C18	18.10	21.95	26.30
New York W3	18.10	21.95	26.30
Palmer, Mass. W12	18.10	21.95	26.30
Trenton, N.J. R5	18.10	21.95	26.30
Worcester, Mass. A7, T6	18.10	21.95	26.30
Youngstown J5	18.45	22.30	26.65

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths)

Beech Bottom, W. Va. W10	Field	Armature	Electric	Motor	Dynamo
Mansfield, O. E6	9.625	11.10	11.80	12.90	13.95
Newport, Ky. A2	9.625	11.10	11.80	12.90	13.95
Niles, O. M21, S3	9.625	11.10	11.80	12.90	13.95
Vandergrift, Pa. U5	9.625	11.10	11.80	12.90	13.95
Warren, O. R2	9.625	11.10	11.80	12.90	13.95
Zanesville, O. A10	11.10	11.80	12.90	13.95	13.95
Zanesville, O. A10 (SP coils)	11.10	11.80	12.90	13.95	13.70

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed 1/2c lower)

Beech Bottom, W. Va. W10	11.35	12.05	13.15	14.20
Brackenridge, Pa. A4	12.05	13.15	14.20	15.25
Granite City, Ill. G4	9.825*11.05*	11.75*	12.85*	13.90*
Indiana Harbor, Ind. I-2	9.625*11.05*	11.55*	12.65*	13.70*
Mansfield, O. E6	9.625*11.35	12.05	13.15	14.20
Vandergrift, Pa. U5	9.625*11.35	12.05	13.15	14.20
Warren, O. R2	9.625*11.35	12.05	13.15	14.20
Zanesville, O. A10 (FP coils)	11.35	12.05	13.15	14.20

H.R. SHEETS (22Ga., cut lengths)

Beech Bottom, W. Va. W10	15.00	15.55	16.05	17.10
Vandergrift, Pa. U5	14.75	15.55	16.05	17.10
Zanesville, O. A10	15.00	15.55	16.05	17.10

C.R. COILS & CUT LENGTHS (22 Ga.)

Brackenridge, Pa. A4	17.60	19.20	19.70	20.20
Butler, Pa. A10	19.20	19.70	20.20	20.70
Vandergrift, Pa. U5	16.60	17.60	18.20	18.70
Warren, O. R2	16.60	17.60	18.20	18.70

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed 1/2c lower. **Cut lengths, 3/4-cent lower.

Weirton, W. Va. W6

Youngstown Y1	10.50
Warren, O. R2	7.90

STRIP, Cold-Rolled Ingot Iron

Warren, O. R2	7.90
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STRIP, C.R. Electroalvanized

Cleveland A7	7.15*
Dover, O. G6	7.15*
Evanston, Ill. M22	7.25*
Riverdale, Ill. A1	7.25*
Warren, O. B9, T5	7.15*
Worcester, Mass. A7	7.70*
Youngstown J5	7.15*

*Plus galvanizing extras.

STRIP, Galvanized

(Continuous)

Sharon, Pa. S3	7.275
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TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Riverdale, Ill. A1	5.50
Sharon, Pa. S3	5.35
Youngstown U5	5.35

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)

Albuquerque, Pa. J5	0.25 lb	0.50 lb	0.75 lb
Fairfield, Ala. T2	\$8.75	\$9.00	\$9.40
Fairless, Pa. U5	8.85	9.10	9.50
Fontana, Calif. K1	8.85	9.10	9.50
Gary, Ind. U5	9.50	9.75	10.15
Granite City, Ill. G4	8.75	9.00	9.40
Indiana Harbor, Ind. I-2, Y1	8.85	9.10	9.50
Irvin, Pa. U5	8.75	9.00	9.40
Niles, O. R2	8.75	9.00	9.40
Pittsburgh, Calif. C11	9.50	9.75	10.15
SparrowsPoint, Md. B2	8.85	9.10	9.50
Weirton, W. Va. W6	8.75	9.00	9.40
Yorkville, O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)

Albuquerque, Pa. J5	7.725	7.925	8.125
Niles, O. R2	7.725	7.925	8.125

TINPLATE, American 1.25 1.50

Albuquerque, Pa. J5	\$10.05	\$10.30
Fairfield, Ala. T2	10.15	10.40
Fairless, Pa. U5	10.15	10.40
Fontana, Calif. K1	10.80	11.05
Gary, Ind. U5	10.05	10.30
Irvin, Pa. U5	10.05	10.30
Pitts. Calif. C11	10.80	11.05
Sp. Pt., Md. B2	10.15	10.40
Weirton, W. Va. W6	10.05	10.30
Yorkville, O. W10	10.05	10.30

BLACK PLATE (Base Box)

Albuquerque, Pa. J5	\$7.85
Fairfield, Ala. T2	7.95
Fairless, Pa. U5	7.95
Fontana, Calif. K1	7.85
Gary, Ind. U5	7.85
Granite City, Ill. G4	7.95
Ind. Harbor, Ind. I-2, Y1	7.85
Irvin, Pa. U5	7.85

WIRE

WIRE, Manufacturing Bright, Low Carbon

Alabama City, Ala. R2	7.65
Albuquerque, Pa. J5	7.65
Alton, Ill. L1	7.85
Atlanta A11	7.85
Bartonsville, Ill. K4	7.75
Buffalo W12	7.65
Chicago W13	7.65
Cleveland A7, C20	7.65
Crawfordsville, Ind. M8	7.75
Donora, Pa. A7	7.65
Duluth A7	7.65
Fairfield, Ala. T2	7.65
Fostoria, O. (24) S1	7.75
Houston S5	7.90
Jacksonville, Fla. M8	8.00
Johnstown, Pa. B2	7.65
Joliet, Ill. A7	7.65
Kansas City, Mo. S5	7.90
Kokomo, Ind. C16	7.75
Los Angeles B3	8.60
Minneapolis, Colo. C10	7.90
Monessen, Pa. P7, P16	7.65
N. Tonawanda, N.Y. B11	7.65
Palmer, Mass. W12	7.95
Pittsburgh, Calif. C11	8.60
Portsmouth, O. P12	7.65
Rankin, Pa. A7	7.65
S. Chicago, Ill. R2	7.65
S. San Francisco C10	8.60
SparrowsPoint, Md. B2	7.75
Sterling, Ill. (1) N15	7.65
Sterling, Ill. N15	7.75
Struthers, O. Y1	7.65
Waukegan, Ill. A7	7.65
Worcester, Mass. A7	7.95

WIRE, MB Spring, High Carbon

Albuquerque, Pa. J5	9.30
Alton, Ill. L1	9.50
Bartonsville, Ill. K4	9.40
Buffalo W12	9.30
Cleveland A7	9.30

Conville, Ill. K4	16.55	Johnsonville, Fla. M8	11.65	Crawfordsville, Mo. S5	17.25	19.05	Hex Nuts, Fininished, Heavy (Incl. Slotted):	60.5	% in. and smaller..	8.0
nessen, Pa. P16	16.55	Johnstown, Pa. B2	10.60	Houston S5	17.40	18.95**	% in. and smaller..	60.5	% in. and smaller..	8.0
bling, N.J. R5	17.05	Joliet, Ill. A7	10.60	KansasCity, Mo. S5	10.85		% in. to 1 1/2 in., incl.	55.5	diam.	+6.0
E, Cold-Rolled Flat		Kokomo, Ind. C16	10.70	Johnstown B2	17.15	18.95*	1% in. and larger..	53.5	6 in. and shorter:	26.0
erson, Ind. G6	11.65	Los Angeles B3	11.40	Kan. City, Mo. S5	17.40		1% in. and larger..	53.5	% in. and smaller..	26.0
timore T6	11.95	Minneapolis, Colo. C10	10.85	Kokomo C16	17.25	18.80*	1 in. and smaller..	63.0	diam.	3.0
ton T6	11.95	Pittsburg, Calif. C11	11.40	Minnequa C10	17.40	18.95**	1 1/2 in. to 1 1/2 in., incl.	59.0	Longer than 6 in.:	+13.0
falo W12	11.65	S. Chicago, Ill. R2	10.60	P'lm'r, Mass. W12	17.45	19.00*	1% in. and larger..	53.5	% in. and smaller..	+13.0
cago W13	11.75	S. San Francisco C10	11.40	Pitts., Calif. C11	17.50	19.05*	1% in. and larger..	53.5	diam.	+32.0
eland A7	11.65	SparrowsPt., Md. B2	10.70	Sterling(37) N15	17.25	19.05*	1% in. and larger..	53.5	diam.	+32.0
Wardsville, Ind. M8	11.65	Sterling, Ill. (37) N15	10.70	Waukegan A7	17.15	18.70*	1% in. and larger..	53.5	diam.	+32.0
er, O. G6	11.65			Worcester A7	17.45		1% in. and larger..	53.5	diam.	+32.0
torla, O. S1	11.95						1% in. and larger..	53.5	diam.	+32.0
nklinPark, Ill. T6	11.75						1% in. and larger..	53.5	diam.	+32.0
omo, Ind. C16	11.65						1% in. and larger..	53.5	diam.	+32.0
ssillon, O. R8	11.65						1% in. and larger..	53.5	diam.	+32.0
waukee C23	11.85						1% in. and larger..	53.5	diam.	+32.0
nessen, Pa. P7, P16	11.65						1% in. and larger..	53.5	diam.	+32.0
mer, Mass. W12	11.95						1% in. and larger..	53.5	diam.	+32.0
yuckett, R.I. N8	11.95						1% in. and larger..	53.5	diam.	+32.0
delphia P24	11.95						1% in. and larger..	53.5	diam.	+32.0
erdale, Ill. A1	11.75						1% in. and larger..	53.5	diam.	+32.0
on, N.Y. R6	11.65						1% in. and larger..	53.5	diam.	+32.0
ron, Pa. S3	11.65						1% in. and larger..	53.5	diam.	+32.0
nton, N.J. R5	11.95						1% in. and larger..	53.5	diam.	+32.0
ren, O. B9	11.65						1% in. and larger..	53.5	diam.	+32.0
cester, Mass. A7, T6	11.95						1% in. and larger..	53.5	diam.	+32.0
LS, Stock							1% in. and larger..	53.5	diam.	+32.0
abamaCity, Ala. R2	11.73						1% in. and larger..	53.5	diam.	+32.0
uippa, Pa. J5	11.73						1% in. and larger..	53.5	diam.	+32.0
anta A11	11.75						1% in. and larger..	53.5	diam.	+32.0
onville, Ill. K4	11.75						1% in. and larger..	53.5	diam.	+32.0
cago W13	11.73						1% in. and larger..	53.5	diam.	+32.0
eland A9	11.73						1% in. and larger..	53.5	diam.	+32.0
Wardsville, Ind. M8	11.75						1% in. and larger..	53.5	diam.	+32.0
ora, Pa. A7	11.73						1% in. and larger..	53.5	diam.	+32.0
uth A7	11.73						1% in. and larger..	53.5	diam.	+32.0
uston, Tex. S5	11.78						1% in. and larger..	53.5	diam.	+32.0
irfield, Ala. T2	11.73						1% in. and larger..	53.5	diam.	+32.0
Johnsonville, Fla. (20) M8	11.84						1% in. and larger..	53.5	diam.	+32.0
et, Ill. A7	11.73						1% in. and larger..	53.5	diam.	+32.0
ntown, Pa. B2	11.73						1% in. and larger..	53.5	diam.	+32.0
asasCity, Mo. S5	11.78						1% in. and larger..	53.5	diam.	+32.0
omo, Ind. C16	11.75						1% in. and larger..	53.5	diam.	+32

SEAMLESS STANDARD PIPE, Threaded and Coupled				Carload discounts from list, %											
Size—Inches	2		2½		3		3½		4		5		6		
List Per Ft	37c		58.5c		76.5c		92c		\$1.09		\$1.48		\$1.92		
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18		
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	
Aliquippa, Pa. J5	....	+9.25 +24.25	....	+2.75 +19.5	....	+0.25 +17	....	1.25 +15.5	....	1.25 +15.5	1	+15.75	3.5	+13.25
Ambridge, Pa. N2	+9.25	+2.75	+0.25	1.25	1.25	1	3.5
Lorain, O. N3	....	+9.25 +24.25	....	+2.75 +19.5	....	+0.25 +17	....	1.25 +15.5	....	1.25 +15.5	1	+15.75	3.5	+13.25
Youngstown Y1	....	+9.25 +24.25	....	+2.75 +19.5	....	+0.25 +17	....	1.25 +15.5	....	1.25 +15.5	1	+15.75	3.5	+13.25

ELECTRIC STANDARD PIPE, Threaded and Coupled				Carload discounts from list, %										
Youngstown R2	+9.25 +24.25	+2.75 +19.5	+0.25 +17	1.25 +15.5	1.25 +15.5	1	+15.75	3.5	+13.25

BUTTWELD STANDARD PIPE, Threaded and Coupled						Carload discounts from list, %						
Size—Inches	¾		1		1½	¾		1		1½		
List Per Ft	5.5c		6c		6c	8.5c		11.5c		17c		
Pounds Per Ft	0.24		0.42		0.57	0.85		1.13		1.68		
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	.....	.....	.....	.....	.....	.....	5.25	+10	8.25	+6	11.75	+1.5
Alton, Ill. L1	.....	.....	.....	.....	.....	.....	3.25	+12	6.25	+8	9.75	+3.5
Benwood, W. Va. W10	4.5	+22	+7.5	+31	+18	+39.5	5.25	+10	8.25	+6	11.75	+1.5
Butler, Pa. F6	5.5	+21	+6.5	+30	+17	+38.5	.....	.....	.....	.....	.....	.....
Etna, Pa. N2	.....	.....	.....	.....	.....	.....	5.25	+10	8.25	+6	11.75	+1.5
Fairless, Pa. N3	.....	.....	.....	.....	.....	.....	3.25	+12	6.25	+8	9.75	+3.5
Fontana, Calif. K1	.....	.....	.....	.....	.....	.....	+8.25	+23.5	+5.25	+19.5	+1.75	+15
Indiana Harbor, Ind. Y1	.....	.....	.....	.....	.....	.....	4.25	+11	7.25	+7	10.75	+2.5
Lorain, O. N3	.....	.....	.....	.....	.....	.....	5.25	+10	8.25	+6	11.75	+1.5
Sharon, Pa. S4	5.5	+21	+6.5	+30	+17	+38.5	.....	.....	.....	.....	.....	.....
Sharon, Pa. M6	.....	.....	.....	.....	.....	.....	5.25	+10	8.25	+6	11.75	+1.5
Sparrows Pt., Md. B2	3.5	+23	8.5	+32	+19	+40.5	3.25	+12	6.25	+8	9.75	+3.5
Wheatland, Pa. W9	5.5	+21	+6	+30	+17	+38.5	5.25	+10	8.25	+6	11.75	+1.5
Youngstown R2, Y1	.....	.....	.....	.....	.....	.....	5.25	+10	8.25	+6	11.75	+1.5

Size—Inches	1½	2	2½	3	3½	4		
List Per Ft	27.5c	37c	58.5c	76.5c	92c	\$1.09		
Pounds Per Ft	2.73	3.68	5.82	7.62	9.20	10.89		
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5
Alton, Ill. L1	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5
Benwood, W. Va. W10	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5
Etna, Pa. N2	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5
Fairless, Pa. N3	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5
Fontana, Calif. K1	1.25	+13.25	1.75	+12.75	3.25	+13	3.25	+13
Indiana Harbor, Ind. Y1	13.75	+0.75	14.25	+0.25	15.75	+0.5	15.25	+0.5
Lorain, O. N3	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5
Sharon, Pa. M6	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5
Sparrows Pt., Md. B2	12.75	+1.75	13.25	+1.25	14.75	+1.5	14.75	+1.5
Wheatland, Pa. W9	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5
Youngstown R2, Y1	14.75	0.25	15.25	0.75	16.75	0.5	16.75	0.5

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling—	Forging Billets	H.R. Strip	Wire Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	36.00	39.00	40.75	42.00	48.50	45.00
202	23.75	30.25	37.25	37.25	42.00	44.25	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	57.00	57.00
303	.....	32.00	41.00	.....	45.50	48.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	55.50	55.50
304L	.....	.....	48.25	51.50	53.00	55.50	63.25	63.25
305	28.50	36.75	42.50	47.50	45.25	47.75	51.25	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	60.25	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	71.00	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	92.75	96.75
314	.....	.....	86.50	.....	86.50	.....	92.75	104.50
316	39.75	49.50	62.25	69.25	69.25	73.00	76.75	81.50
316L	.....	.....	70.00	76.50	77.00	80.75	84.50	89.25
317	48.00	60.00	76.75	88.25	86.25	90.75	93.50	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	59.75	65.50
330	.....	.....	118.75	.....	132.00	138.50	105.50	108.00
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	69.75	79.25
403	.....	.....	32.00	.....	35.75	37.75	40.25	48.25
405	19.50	25.50	29.75	36.00	33.50	35.25	37.50	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	35.00	40.25
416	.....	.....	28.75	.....	32.50	34.25	36.25	48.25
420	.....	.....	33.50	41.75	39.25	41.25	45.25	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	36.00	40.75
430F	.....	.....	29.50	.....	33.00	34.75	36.75	51.75
431	28.75	37.75	.....	.....	42.00	44.25	46.00	56.00
446	.....	.....	39.25	59.00	44.25	46.50	47.75	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Div., H. K. Porter Co. Inc.; Alloy Tube Div., Carpenter Steel Co.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Charter Wire Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Elwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Jones & Laughlin Steel Corp.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McInnes Steel Co.; McLouth Steel Corp.; Metal Forming Corp.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Stainless Steel Div., Jones & Laughlin Steel Corp.; Superior Steel Corp.; Superior Tube Co.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

	Plates	Sheets
	Carbon Base	Carbon Base
	5% 10% 15% 20%	20%
Stainless	.....	.....
302	34.70	37.95
304	36.90	40.55
304L	40.35	44.40
316	45.05	49.35
316L	47.30	53.80
316 Cb	36.60	40.05
321	38.25	42.40
347	28.60	29.85
405	28.15	29.55
410	28.30	29.80
430	48.90	59.55
Inconel	41.65	51.95
Nickel	41.95	52.60
Nickel, Low Carbon	43.35	53.55
Monel	.....	.....
Copper*	.....	.....

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	\$ per lb	Grade	\$ per lb
Regular Carbon	0.290	Cr Hot Work	0.45-0.495
Extra Carbon	0.345	W-Cr Hot Work	0.43-0.475
Special Carbon	0.41-0.45	V-Cr Hot Work	0.460
Oil Hardening	0.450	Hi-Carbon-Cr	0.830

W	Cr	V	Mo	\$ per lb
20.25	4.25	1.6	12.25	4.170
18.25	4.25	1	4.75	2.385
18	4	2	9	2.755
18	4	2	.....	1.845
18	4	1	.....	1.680
9	3.5	.....	.....	1.275
13.5	4	3	.....	1.945
6.4	4.5	1.9	5	2.325
6	4	3	.....	1.185
1.5	4	1	8.5	1.430

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

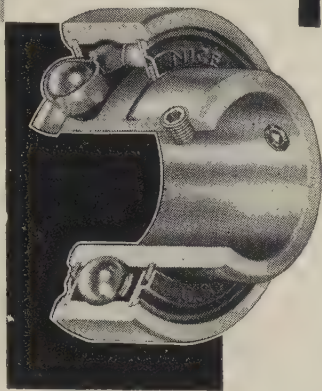
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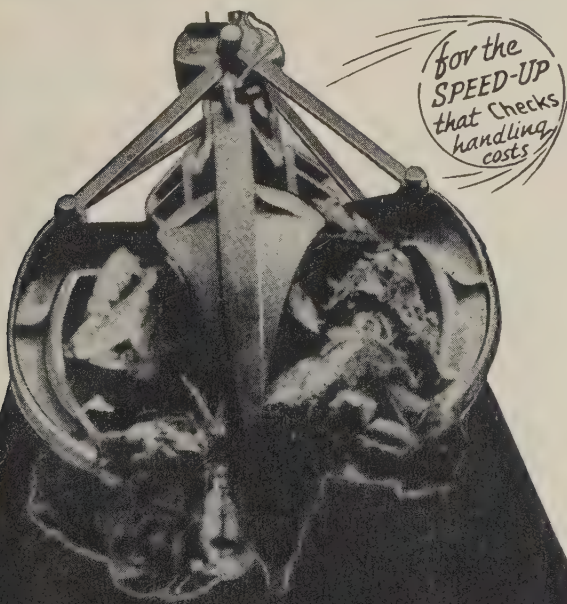


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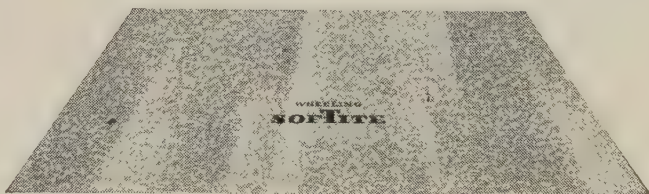


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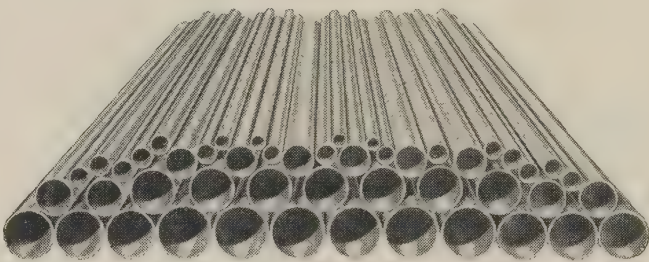
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Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal transportation tax.

	Basic	No. 2 Foundry	Malleable	Bessemer		Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District					Youngstown District				
Alabama City, Ala. R2	62.00	62.50	....	....	Hubbard, O. Y1	....	....	66.50	....
Birmingham R2	62.00	62.50†	....	....	Sharpville, Pa. S6	66.00	....	66.50	67.00
Birmingham U6	....	62.50†	66.50	....	Youngstown Y1	....	....	66.50	67.00
Woodward, Ala. W15	62.00**	62.50†	66.50	....	Mansfield, O., deld.	70.90	....	71.40	71.90
Cincinnati, deld.	....	70.20	....	....	Duluth I-3	66.00	66.50	66.50	67.00
Buffalo District					Erie, Pa. I-3	66.00	66.50	66.50	67.00
Buffalo H1, R2	66.00	66.50	67.00	67.50	Everett, Mass. E1	66.50	67.00	67.50	....
N. Tonawanda, N.Y. T9	....	66.50	67.00	67.50	Fontana, Calif. K1	75.00	75.50	....	....
Tonawanda, N.Y. W12	66.00	66.50	67.00	67.50	Geneva, Utah C11	66.00	66.50	....	....
Boston, deld.	77.29	77.79	78.29	....	Granite City, Ill. G4	67.90	68.40	68.90	....
Rochester, N.Y., deld.	69.02	69.52	70.02	....	Ironton, Utah C11	66.00	66.50	....	....
Syracuse, N.Y., deld.	70.12	70.62	71.12	....	Minnequa, Colo. C10	68.00	68.50	69.00	....
Chicago District					Rockwood, Tenn. T3	....	62.50†	66.50	....
Chicago I-3	66.00	66.50	66.50	67.00	Toledo, O. I-3	66.00	66.50	66.50	67.00
S. Chicago, Ill. R2	66.00	....	66.50	....	Cincinnati, deld.	72.54	73.04	....	....
S. Chicago, Ill. W14	66.00	....	66.50	67.00	**Phos. 0.70-0.90%; Phos. 0.30-0.69%, \$63.				
Milwaukee, deld.	66.62	69.12	69.12	69.62	†Phos. 0.70-0.90%; Phos. 0.30-0.69%, \$63.50.				
Muskegon, Mich., deld.	....	74.12	74.12	....	PIG IRON DIFFERENTIALS				
Cleveland District					Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.				
Cleveland R2, A7	66.00	66.50	66.50	67.00	Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.				
Akron, O., deld.	69.12	69.62	69.62	70.12	Nickel: Under 0.50% no extra; 0.50-0.74%, inclusive, add \$2 per ton and each additional 0.25%, add \$1 per ton.				
Mid-Atlantic District					BLAST FURNACE SILVER PIG IRON, Gross Ton				
Birdsboro, Pa. B10	68.00	68.50	69.00	69.50	(Base 6.00-6.50% silicon; add \$1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add \$1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add \$1 for each 0.50% Mn over 1%)				
Chester, Pa. P4	66.50	67.00	67.50	....	Jackson, O. I-3, J1	....	....	78.00	....
Swedeland, Pa. A3	68.00	68.50	69.00	69.50	Buffalo H1	....	....	78.50	....
New York, deld.	....	75.10	75.60	....	ELECTRIC FURNACE SILVER PIG IRON, Gross Ton				
Newark, N.J., deld.	72.29	72.79	73.29	73.79	(Base 14.01-14.50% silicon; add \$1 for each 0.5% Si to 18%; \$1.25 for each 0.50% Mn over 1%; \$2 per gross ton premium for 0.045% max P)				
Philadelphia, deld.	70.01	70.51	71.01	71.59	Calvert City, Ky. P15	....	....	\$99.00	....
Troy, N.Y. R2	68.00	68.50	69.00	69.50	Niagara Falls, N.Y. P15	....	....	99.00	....
Pittsburgh District					Keokuk, Iowa Open-hearth & Fdry, \$9 freight allowed K2	....	....	103.50	....
Neville Island, Pa. P6	66.00	66.50	66.50	67.00	Keokuk, Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max frgt allowed up to \$9, K2	....	....	106.50	....
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48	LOW PHOSPHORUS PIG IRON, Gross Ton				
McKees Rocks, Pa., deld.	....	67.60	67.60	68.13	Lyles, Tenn. T3 (Phos. 0.035% max)	....	....	\$78.50	....
Lawrenceville, Homestead, Willmerding, Monaca, Pa., deld.	....	68.26	68.26	68.79	Troy, N.Y. R2 (Phos. 0.035% max)	....	....	74.00	....
Verona, Trafford, Pa., deld.	68.29	68.82	68.82	69.35	Philadelphia, deld.	....	....	82.27	....
Brackenridge, Pa., deld.	68.60	69.10	69.10	69.63	Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	....	....	71.00	....
Midland, Pa. C18	66.00	....	....	....	Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	....	....	71.00	....
					Erie, Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	....	....	71.00	....
					Neville Island, Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	....	....	71.00	....

Warehouse Steel Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Houston, Seattle no charge.

	SHEETS			STRIp	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†		H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††§		Carbon	Floor
Atlanta	8.59§	9.86§	10.13§	....	8.64	9.01	10.68	9.05	8.97	10.90
Baltimore	8.28	8.88	9.76	....	8.76	9.06	11.34 #	15.18	8.66	10.14
Birmingham	8.18	9.45	10.15	....	8.23	10.57	....	8.64	8.56	10.70
Boston	9.38	10.44	11.45	....	9.42	9.73	....	15.28	9.63	9.72
Buffalo	8.25	9.45	11.07	....	8.50	8.80	....	15.00	8.90	10.45
Chattanooga	7.99	9.24	9.10	....	8.00	8.24	10.04	....	8.44	8.40
Chicago	8.20	9.45	10.00	....	8.23	8.60	8.80	14.65	8.64	8.56
Cincinnati	8.34	9.48	10.05	....	8.54	8.92	9.31	14.96	9.18	8.93
Cleveland	8.18	9.45	9.95	....	8.33	8.69	....	14.74	9.01	8.79
Denver	9.38	11.75	....	....	9.41	9.78	11.10	....	9.82	9.74
Detroit	8.43	9.70	10.35	....	8.58	8.90	9.15	14.91	9.18	8.91
Erie, Pa.	8.20	9.45	9.95§	....	8.50	8.75	9.05§	....	9.00	8.85
Houston	8.45	9.75	8.45	....	8.60	9.05	11.10	....	9.10	9.05
Jackson, Miss.	8.09	9.34	9.79	....	8.16	8.41	10.23	....	8.54	8.50
Los Angeles	9.50	10.75	11.65	....	9.55	9.70	12.75	18.00	9.60	9.55
Milwaukee	8.33	9.58	10.13	....	8.36	8.73	9.03	14.78	8.85	8.69
Moline, Ill.	8.55	9.80	10.35	....	8.58	8.95	9.15	....	8.99	8.91
New York	8.87	10.13	10.56	....	9.31	9.57	....	15.00	9.35	9.43
Norfolk, Va.	8.05	....	....	....	8.55	8.60	10.80	....	8.95	8.45
Philadelphia	8.00	8.90	9.87	51.94	8.67	8.65	11.51 #†††	15.01	8.50	8.77
Pittsburgh	8.18	9.45	10.35	50.00	8.33	8.60	....	14.65	8.64	8.56
Portland, Oreg.	8.50	11.20	11.55	57.20	11.35††	8.65	14.65 #	15.95	9.60	8.30
Richmond, Va.	8.45	....	10.40	....	9.15	9.15	....	....	9.40	8.85
St. Louis	8.54	9.79	10.36	....	8.59	8.97	9.41	15.01	9.10	8.93
St. Paul	8.79	10.04	10.61	....	8.84	9.36	9.66	....	9.44	9.30
San Francisco	9.35	10.75	11.00	54.85	9.45	9.70	13.00	16.00	9.50	9.60
Seattle	9.95	11.15	12.00	57.20	10.00	10.10	14.05	16.35	9.80	9.70
Spokane, Wash.	9.95	11.15	12.00	....	10.00	10.10	14.05	17.10	9.80	9.70
Washington	8.48	9.58	....	....	9.06	9.15	9.73	....	9.35	8.86

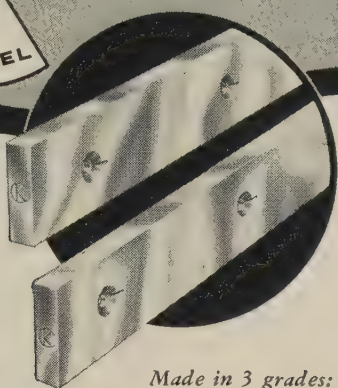
*Prices do not include gage extras; †prices include gage and coating extras, except in Birmingham (coating extra excluded); ‡includes 35-cent bar quality extras; §42 in. and under; **½ in. and heavier; ††as annealed ††over 4 in.; §\$over 3 in.; #1 in. round C-1018; †††item quantity.

Base quantities, 2000 to 4999 lb except as noted; cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 9999 lb, and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, Portland, Oreg. 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Portland, Oreg., 1000 to 9999 lb; §—400 to 9999 lb; #—1000 to 1999 lb; #—2000 to 3999 lb; †—2000 lb and over.

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SQUARING SHEAR BLADES

SOLID
TOOL
STEEL



Made in 3 grades:

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"Century" (high alloy)

"Standard" (low alloy)

Used by EVERY manufacturer of squaring shears as original equipment. Because they are ground to the closest tolerances in the knife industry — "CLEVELAND" shear blades insure maximum cutting life . . .

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BUSH-LOCK

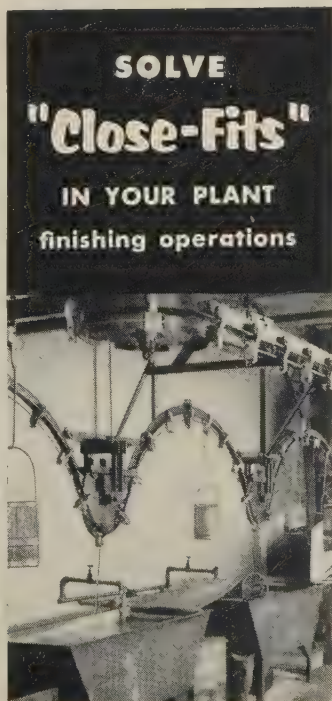
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Sharp turns (from 7½" R) — plus the shortest possible dip in the industry for trolley type conveyors — eliminate space-waste and increase plant capacity in every type of industry.

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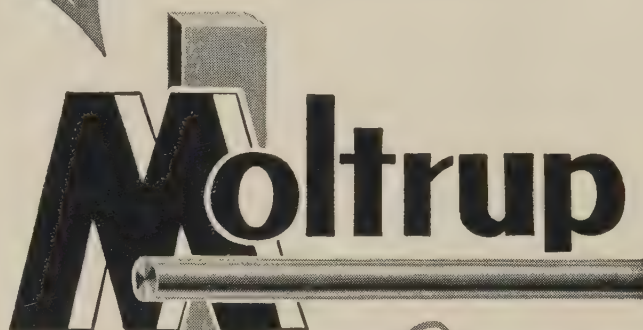
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(Consult telephone directory in cities listed)

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BEAVER FALLS, PA.

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Detroit, Mich. New York, N. Y. Syracuse, N. Y. Cincinnati, O.
Cleveland, O. Los Angeles, Calif.

5-1

Refractories

Fire Clay Brick (per 100)
High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., \$135; Salina, Pa., \$140; Niles, O., \$138; Cutler, Utah, \$165.
Super-Duty: Ironton, O., Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Pa., New Savage, Md., St. Louis, \$175; Stevens Pottery, Ga., \$185; Cutler, Utah, \$233.

Silica Brick (per 1000)
Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, O., Hawstone, Pa., \$150; Warren, Niles, Windham, O., Hays, Latrobe, Morrisville, Pa., \$155; E. Chicago, Ind., Joliet, Rockdale, Ill., \$160; Lehigh, Utah, \$175; Los Angeles, \$180.
Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, O., Leslie, Md., Athens, Tex., \$157; Morrisville, Pa., Latrobe, Pa., \$160; E. Chicago, Ind., \$167; Curtner, Calif., \$182.

Silica Brick (per 1000)
 Clearfield, Pa., \$140; Philadelphia, \$137; Woodbridge, N. J., \$135.
Ladle Brick (per 1000)
Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, O., \$96.75; Clearfield, Pa., Portsmouth, O., \$102.

High-Alumina Brick (per 1000)
50 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$235; Danville, Ill., \$238; Philadelphia, Clearfield, Pa., \$230; Orviston, Pa., \$245.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

Sponge Iron, Swedish:
 Deld. east of Mississippi river, ocean bags 23,000 lb and over... 10.50
 F.o.b. Riverton or Camden, N. J., west of Mississippi River... 9.50
Sponge Iron, Domestic:
 98 + % Fe:
 Deld. east of Mississippi River, 23,000 lb and over 10.50
 F.o.b. Riverton, N.J., west of Mississippi River... 9.50
Sponge Iron, Canadian:
 F.o.b. shipping point 9.50
Electrolytic Iron: ...
 Melting stock, 99.9% Fe, irregular fragments of 1/2 in. x 1.3 in. 23.00
 Annealed, 99.5% Fe... 36.50
 Unannealed (99 + % Fe) 36.00
 Unannealed (99 + % Fe) (minus 325 mesh) 59.00
Powder Flakes (minus 16, plus 100 mesh)... 29.00
Carbonyl Iron:
 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305..	\$6.30	\$6.25	\$6.25	\$6.50
Bar Size Angles	6.62	6.57	6.57	6.75
Structural Angles	6.62	6.57	6.57	6.75
I-Beams	6.87	6.82	6.82	7.00
Channels	6.87	6.82	6.82	7.00
Plates (basic bessemer)	8.35	8.30	8.30	8.60
Sheets, H.R.	8.25	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	9.00	8.95	8.95	9.25
Furring Channels, C.R., 1000 ft. % x 0.30 lb per ft	26.79	26.67	26.67	27.36
Barbed Wire (†)	6.95	6.95	6.95	7.40
Merchant Bars	6.87	6.82	6.82	7.22
Hot-Rolled Bands	7.20	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	6.73	6.73	6.73	7.13
Wire Rods, O.H. Cold Heading Quality No. 5	7.07	7.07	7.07	7.47
Bright Common Wire Nails (\$)	8.38	8.38	8.38	8.58

†Per 82 lb, net, reel. \$Per 100-lb kegs, 20d nails and heavier.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$295; Danville, Ill., \$298; Philadelphia, Clearfield, Orviston, Pa., \$305.
 70 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$335; Danville, Ill., \$338; Philadelphia, Clearfield, Orviston, Pa., \$345.

Sleeves (per 1000)
 Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, \$188.

Nozzles (per 1000)
 Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, \$310.

Runners (per 1000)
 Reesdale, Johnstown, Bridgeburg, Pa., \$234.

Dolomite (per net ton)
 Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Nario, O., \$16.75; Thornton, McCook, Ill., \$17; Dolly Siding, Bonne Terre, Mo., \$15.

Magnesite (per net ton)
 Domestic, dead-burned, bulk 1/2 in. grains with fines: Chewelah, Wash., Luning, Nev., \$46; % in. grains with fines: Baltimore, \$73.

Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF₂ content 72.5%, \$37-41; 70%, \$36.40; 60%, \$33-36.50. Imported, net tons, f.o.b. cars point of entry duty paid, metallurgical grade: European, \$33-34; Mexican, all-rail, duty paid, \$25.25-25.75; barge, Brownsville, Tex., \$27.25-27.75.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE		Per
Diam.	Length	100 lb
2	24	\$57.75
2 1/2	30	37.25
3	40	35.25
4	40	33.25
5 1/2	40	33.00
6	60	30.00
7	60	26.75
8, 9, 10	60	26.50
12	72	25.50
14	60	25.50
16	72	24.50
17	60	25.50
18	72	24.50
20	72	24.00
24	84	24.75

CARBON		Per
		100 lb
8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
16	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Ores

Lake Superior Iron Ore
 (Prices effective for the 1957 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	\$11.60
Mesabi nonbessemer	11.45
Old range bessemer	11.85
Old range nonbessemer	11.70
Open-hearth lump	12.70
High phos.	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore
 Cents per unit, deld. E. Pa.
 New Jersey, foundry and basic 62-64% concentrates 25.00-27.90

Foreign Iron Ore
 Cents per unit, c.i.f. Atlantic ports
 Swedish basic, 65% 27.00-27.50
 N. African hematite (spot) nom.
 Brazilian iron ore, 68-69% 30.00

Tungsten Ore
 Net ton, unit, before duty
 Foreign wolframite, good commercial quality 13.75-14.25
 Domestic, concentrates mine 55.00

Manganese Ore
 Mn 46-48%, Indian (export tax included), \$1.35-\$1.45 per long ton unit, c.i.f. U. S. ports, duty for buyer's account: other than Indian, \$1.35-\$1.45; contracts by negotiation.

Chrome Ore
 Gross ton f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian
 48% 3:1 \$55.00-58.00
 48% 2.8:1 52.00-55.00
 48% no ratio 46.00-48.00

South African Transvaal
 48% no ratio \$40.00-41.00
 44% no ratio 30.00-31.00

Turkish
 48% 3:1 \$59.00-62.00

Domestic
 Rail nearest seller
 18% 3:1 \$39.00

Molybdenum
 Sulphide concentrate, per lb of Mo content, mines, unpacked \$1.18

Antimony Ore
 Per short ton unit of Sb content, c.i.f. seaboard
 55-60% \$2.90-3.30
 60-65% 3.30-3.60

Vanadium Ore
 Cents per lb V₂O₅
 Domestic 31.00

Metallurgical Coke

Price per net ton	
Beehive Ovens	
Connellsville, furnace	\$14.75-15.75
Connellsville, foundry	18.00-18.50
Oven Foundry Coke	
Birmingham, ovens	\$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, deld.	32.25
Saginaw, deld.	33.83
Erie, Pa., ovens	30.50
Everett, Mass., ovens	31.55*
New England, deld.	29.75
Indianapolis, ovens	29.00
Ironton, O., ovens	31.84
Cincinnati, deld.	29.75
Kearny, N. J., ovens	30.50
Milwaukee, ovens	30.50
Painesville, O., ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
Neville Island (Pittsburgh), Pa., ovens	29.25
St. Paul, ovens	29.75
Chicago, deld.	33.24
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Ore within \$4.85 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens
 Pure benzene 36.00
 Toluene, one deg. 32.00-34.00
 Industrial xylene 32.00-35.00
 Per ton, bulk, ovens
 Ammonium sulfate \$32.00
 Cents per pound, producing point
 Phenol: Grade 1, 15.00; Grade 2-3, 14.50; Grade 4, 16.50; Grade 5, 15.25.

Scrap Prices Further Depressed

Consumers still showing little interest in tonnage, and market undertone is soft. STEEL's composite on the prime grade is \$1.66 to \$50.17, lowest since May

Scrap Prices, Page 214

Philadelphia — Domestic steel scrap prices continue to decline to slack demand. No. 1 heavy melting is holding at \$48, delivery, No. 2 heavy melting at \$44, No. 1 bundles at \$50, No. 2 bundles \$39, and No. 1 busheling at

Pittsburgh—An area mill purchased No. 1 heavy melting scrap \$52, No. 2 heavy melting for and No. 2 bundles for \$41 last week. The prices represented declines of \$2 to \$3 from those of previous week. Demand continues dull. Price of No. 1 railroad heavy melting dropped \$4 a ton, to Users of cut structurals say market is softer, with prices about \$1 the past week.

Cincinnati—No. 1 heavy melting off \$1 a ton to \$48-\$49, broker's buying price, in a slow market. They have placed September orders, but tonnages are small.

Cleveland — The scrap market is slow. Material is moving on old contracts, but there is practically no new buying. Prices are sliding downward. They are off \$2 from week-ago figures, but the list nominal in the absence of representative sales.

New York — Brokers reduced their buying prices on most grades of steel scrap. They are offering \$48 for No. 1 heavy melting No. 1 bundles, \$38-\$39 for

No. 2 heavy melting, \$35-\$36 for No. 2 bundles, \$19-\$20 for machine shop turnings, \$21-\$22 for mixed borings and turnings, \$22-\$23 for short shoveling turnings, and \$50-\$51 for low phos structurals and plates.

Nickel bearing grades of stainless scrap continue to slip.

Chicago—A high degree of stability is noted in the scrap market here. The few price adjustments made though have been downward \$1 to \$2 a ton. Blast furnace grades and a few railroad items are involved.

Buffalo — Principal grades of steel scrap are off \$2 a ton on new sales here. No. 1 heavy melting sold at \$48, No. 2 heavy melting at \$41.50, and No. 2 bundles at \$38.50. All are down \$2 a ton from prices paid last month.

Blast furnace material also is off around \$2, along with low phos, now quoted at \$53-54.

Detroit—The local scrap market is steady with minor buys reported. There isn't enough activity to develop a definite market trend, but indications are prices may move upward slightly at the end of this month.

Birmingham—The scrap market is weak. Declines are reported on many items. Brokers attribute these to the drying up of export demand and heavier dealer offerings to interior mills.

Los Angeles—A slightly softer scrap market is noted here. Prices are holding though and dealers think present levels will be maintained through most of September.

Seattle—Increasing weakness in the eastern markets has not affected the local market. Prices are unchanged, holding at the lower levels established several weeks ago. Dealers say No. 1 is steady at \$2 and No. 2 at \$40.

San Francisco—Prime grades of steel scrap are quoted off \$3 a ton. The decline is attributed to slow export demand and curtailed operations at domestic steel mills.

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Grefco offers a wide variety of air-setting and of heat-setting high temperature bonding mortars of both the dry and wet varieties. Here are just a few:

BRIKLOK is a super duty, air-setting, fireclay base mortar which sets hard and develops high strength merely upon drying. It is widely used for laying, coating and patching fireclay and silica brickwork. BRIKLOK has good resistance to slag and abrasion and withstands temperatures up to 3056°F. BRIKLOK A is a wet mixture while BRIKLOK is furnished as a dry powder.

GREFCO SILLIMANITE is a highly refractory mortar with a base material consisting mainly of mullite crystals. This insures very high refractoriness and freedom from shrinkage at high temperatures. This high quality mortar is recommended for laying up and coating fireclay, high alumina or SILLIMANITE brick, and should always be used wherever mortar is required for the latter.

SILLIMANITE 343 is a wet air-setting mixture. **SILLIMANITE 340** is a dry heat-setting mixture. Consult your Grefco representative as to which of the several varieties best suits your needs.

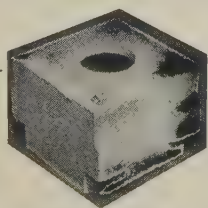
GENERAL REFRACTORIES COMPANY
Philadelphia 2, Pa.



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Dunbar, Pa. . . . 4213

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Sales Office
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Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL, Sept. 11, 1957. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Sept. 11	\$50.17
Sept. 4	51.83
Aug. Avg	53.33
Sept. 1956	59.08
Sept. 1952	43.00

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting....	51.00-52.00
No. 2 heavy melting....	43.00-44.00
No. 1 factory bundles ..	59.00-60.00
No. 1 dealer bundles ..	51.00-52.00
No. 2 bundles	40.00-41.00
No. 1 busheling	51.00-52.00
Machine shop turnings..	30.00-31.00
Mixed borings, turnings.	30.00-31.00
Short shovel turnings..	33.00-34.00
Cast iron borings	33.00-34.00
Cut structurals:	
2 ft and under	60.00-61.00
3 ft lengths	59.00-60.00
Heavy turnings	47.00-48.00
Punchings & plate scrap	59.00-60.00
Electric furnace bundles.	59.00-60.00

Cast Iron Grades

No. 1 cupola	44.00-45.00
Stove plate	42.00-43.00
Unstripped motor blocks	31.00-32.00
Clean auto cast	49.00-50.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt..	56.00-57.00
Rails, 2 ft and under ..	71.00-72.00
Rails, 18 in. and under ..	72.00-73.00
Angles, splice bars	61.00-62.00
Rails, rerolling	67.00-68.00

Stainless Steel Scrap

18-8 bundles & solids..	240.00-250.00
18-8 turnings	140.00-150.00
430 bundles & solids ..	80.00-85.00
430 turnings	55.00-60.00

CLEVELAND

No. 1 heavy melting....	49.00-50.00
No. 2 heavy melting....	40.00-41.00
No. 1 factory bundles ..	54.00-55.00
No. 1 bundles	49.00-50.00
No. 2 bundles	39.00-40.00
No. 1 busheling	49.00-50.00
Machine shop turnings..	21.00-22.00
Short shovel turnings..	25.00-26.00
Mixed borings, turnings.	25.00-26.00
Cast iron borings	25.00-26.00
Cut foundry steel	49.00-50.00
Cut structurals, plates	
2 ft and under	56.00-57.00
Low phos. punchings & plate	50.00-51.00
Alloy free, short shovel turnings	28.00-29.00
Electric furnace bundles.	50.00-51.00

Cast Iron Grades

No. 1 cupola	49.00-50.00
Charging box cast	39.00-40.00
Heavy breakable cast ..	37.00-38.00
Stove plate	46.00-47.00
Unstripped motor blocks.	33.00-34.00
Brake shoes	37.00-38.00
Clean auto cast	50.00-51.00
Burnt cast	35.00-36.00
Drop broken machinery..	52.00-53.00

Railroad Scrap

No. 1 R.R. heavy melt..	51.00-52.00
R.R. malleable	59.00-60.00
Rails, 2 ft and under ..	71.00-72.00
Rails, 18 in. and under ..	72.00-73.00
Rails, random lengths..	64.00-65.00
Cast steel	62.00-63.00
Railroad specialties ..	64.00-65.00
Uncut tires	59.00-60.00
Angles, splice bars	64.00-65.00
Rails, rerolling	69.00-70.00

Stainless Steel
(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids..	230.00-240.00
18-8 turnings	130.00-140.00
430 clips, bundles, solids	75.00-80.00
430 turnings	40.00-50.00

YOUNGSTOWN

No. 1 heavy melting....	52.00-53.00
No. 2 heavy melting....	44.00-45.00
No. 1 bundles	52.00-53.00
No. 2 bundles	41.00-42.00
No. 1 busheling	52.00-53.00
Machine shop turnings..	21.00-22.00
Short shovel turnings..	27.00-28.00
Cast iron borings	27.00-28.00
Low phos.	54.00-55.00
Electric furnace bundles.	54.00-55.00

Railroad Scrap

No. 1 R.R. heavy melt..	54.00-55.00
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CHICAGO

No. 1 heavy melt., indus.	52.00-53.00
No. 1 hvy melt., dealer ..	49.00-50.00
No. 2 heavy melting ..	41.00-42.00
No. 1 factory bundles ..	55.00-56.00
No. 1 dealer bundles ..	50.00-51.00
No. 2 bundles	39.00-40.00
No. 1 busheling, indus.	52.00-53.00
No. 1 busheling, dealer ..	49.00-50.00
Machine shop turnings..	30.00-31.00
Mixed borings, turnings.	32.00-33.00
Short shovel turnings..	32.00-33.00
Cast iron borings	32.00-33.00
Cut structurals, 3 ft. ..	54.00-55.00
Punchings & plate scrap	55.00-56.00

Cast Iron Grades

No. 1 cupola	44.00-45.00
Stove plate	42.00-43.00
Unstripped motor blocks.	34.00-35.00
Clean auto cast	49.00-50.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt..	54.00-55.00
R.R. malleable	58.00-59.00
Rails, 2 ft and under ..	66.00-67.00
Rails, 18 in. and under ..	67.00-68.00
Angles, splice bars	61.00-62.00
Axles	67.00-68.00
Rails, rerolling	65.00-66.00

Stainless Steel Scrap

18-8 bundles & solids..	225.00-235.00
18-8 turnings	125.00-135.00
430 bundles & solids ..	90.00-100.00
430 turnings	60.00-70.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting ..	45.00-46.00
No. 2 heavy melting ..	39.00-41.00
No. 1 bundles	45.00-46.00
No. 2 bundles	35.50-36.50
No. 1 busheling	45.00-46.00
Machine shop turnings..	25.00-26.00
Mixed borings, turnings.	26.00-27.00
Short shovel turnings..	27.00-28.00
Punchings & plate scrap	53.00-54.00

Cast Iron Grades

No. 1 cupola	49.00
Charging box cast	44.00
Stove plate	44.00
Heavy breakable	43.00
Unstripped motor blocks	34.00
Clean auto cast	51.00
Malleable	55.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting ..	47.00
No. 2 heavy melting ..	45.00
No. 1 bundles	47.00
No. 2 bundles	39.00
No. 1 busheling	47.00
Machine shop turnings..	28.00
Short shovel turnings..	32.00

Cast Iron Grades

No. 1 cupola	47.00
Charging box cast	43.00
Heavy breakable cast ..	43.00
Unstripped motor blocks	43.00
Brake shoes	40.00
Clean auto cast	48.00
Stove plate	44.00

Railroad Scrap

No. 1 R.R. heavy melt..	54.00
Rails, 18 in. and under ..	70.00
Rails, random lengths..	63.00
Rails, rerolling	71.00
Angles, splice bars	59.00

PHILADELPHIA

No. 1 heavy melting	48.00
No. 2 heavy melting....	44.00
No. 1 bundles	50.00
No. 2 bundles	39.00
No. 1 busheling	50.00
Electric furnace bundles.	52.00-53.00
Mixed borings, turnings.	34.00
Short shovel turnings..	35.00
Machine shop turnings..	32.00
Heavy turnings	43.00-44.00
Structural & plate	54.00-55.00
Couplers, spring, wheels	66.00
Rail crops, 2 ft & under	69.00-71.00

Cast Iron Grades

No. 1 cupola	47.00
Heavy breakable cast..	53.00
Malleable	62.00
Drop broken machinery	56.00-57.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	47.00-48.00
No. 2 heavy melting	38.00-39.00
No. 1 bundles	47.00-48.00
No. 2 bundles	35.00-36.00
Machine shop turnings..	19.00-20.00
Mixed borings, turnings.	21.00-22.00
Short shovel turnings ..	22.00-23.00
Low phos. (structural & plate	50.00-51.00

Cast Iron Grades

No. 1 cupola	46.00-47.00
Unstripped motor blocks	39.00-40.00
Heavy breakable	46.00-47.00

Stainless Steel

18-8 sheets, clips, solids	200.00-210.00
18-8 borings, turnings..	100.00-105.00
430 sheets, clips, solids	65.00-75.00
410 sheets, clips, solids	50.00-55.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting....	38.00-39.00
No. 2 heavy melting....	33.00-34.00
No. 1 bundles	38.00-39.00
No. 2 bundles	31.00-32.00
No. 1 busheling	38.00-39.00
Machine shop turnings..	18.00-18.50
Mixed borings, turnings.	19.00-19.50
Short shovel turnings..	20.00-21.00
No. 1 cast	33.00-34.00
Mixed cupola cast	32.00-33.00
No. 1 machinery cast ..	41.00-42.00

BUFFALO

No. 1 heavy melting ..	47.00-48.00
No. 2 heavy melting ..	40.50-41.50
No. 1 bundles	47.00-48.00
No. 2 bundles	37.50-38.50
No. 1 busheling	47.00-48.00
Mixed borings, turnings.	31.00-32.00
Machine shop turnings..	29.00-30.00
Short shovel turnings..	32.00-33.00
Cast iron borings	33.00-34.00
Low phos.	53.00-54.00

Cast Iron Grades

No. 1 cupola	48.00-49.00
No. 1 machinery	53.00-54.00

Railroad Scrap

Rails, random lengths..	61.00-62.00
Rails, 3 ft and under ..	66.00-67.00
Railroad specialties ..	59.00-60.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting....	48.00-49.00
No. 2 heavy melting	43.00-44.00
No. 1 bundles	49.00-50.00
No. 2 bundles	38.00-39.00
No. 1 busheling	49.00-50.00
Machine shop turnings..	30.00-31.00
Mixed borings, turnings.	26.00-27.00
Short shovel turnings ..	33.00-34.00
Cast iron borings	26.00-27.00
Low phos. 18 in.	56.00-57.00

Cast Iron Grades

No. 1 cupola	44.00-45.00
Heavy breakable cast ..	41.00-42.00
Charging box cast	41.00-42.00
Drop broken machinery	54.00-55.00

Railroad Scrap

No. 1 R.R. heavy melt..	53.00-54.00
Rails, 18 in. and under ..	71.00-72.00
Rails, random lengths..	64.00-65.00

BIRMINGHAM

No. 1 heavy melting	46.00-47.00
No. 2 heavy melting	36.00-37.00
No. 1 bundles	46.00-47.00
No. 2 bundles	32.00-33.00
No. 1 busheling	46.00-47.00
Cast iron borings	27.00-28.00
Short shovel turnings ..	37.00-38.00
Machine shop turnings..	36.00-37.00
Bar crops and plates ..	54.00-55.00
Structurals & plate	57.00-58.00
Electric furnace bundles	48.00-49.00
Electric furnace:	
3 ft and under	46.00-47.00
2 ft and under	47.00-48.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	54.00-55.00
Stove plate	54.00-55.00
Unstripped motor blocks	44.00-45.00
Charging box cast	37.00-38.00
No. 1 wheels	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt..	52.00-53.00
Rails, 18 in. and under ..	63.00-64.00
Rails, rerolling	62.00-63.00
Rails, random lengths ..	57.00-58.00
Angles, splice bars	58.00-59.00

SEATTLE

No. 1 heavy melting..	42.00
No. 2 heavy melting....	40.00
No. 1 bundles	40.00
No. 2 bundles	29.00
Machine shop turnings..	27.00
Mixed borings, turnings	27.00
Electric furnace No. 1.	48.00

Cast Iron Grades

No. 1 cupola	38.00
Heavy breakable cast..	35.00
Unstripped motor blocks	30.50
Stove plate (f.o.b. plant)	28.00

LOS ANGELES

No. 1 heavy melting ..	50.00
No. 2 heavy melting	48.00
No. 1 bundles	49.00
No. 2 bundles	38.00
Machine shop turnings	36.00
Shoveling turnings	36.00
Cast iron borings	32.00
Cut structural and plate, 1 ft and under	61.00

Cast Iron Grades

(F.o.b. shipping point)	
No. 1 cupola	55.00
Railroad Scrap	
No. 1 R.R. heavy melt..	50.00

SAN FRANCISCO

No. 1 heavy melting ..	44.00
No. 2 heavy melting ..	42.00
No. 1 bundles	43.00
No. 2 bundles	32.00
Machine shop turnings.	30.00
Mixed borings, turnings	30.00
Cast iron borings	30.00
Heavy turnings	30.00
Short shovel turnings...	30.00
Cut structurals, 3 ft..	53.00

**LOGEMANN**

LOGEMANN Metal Balers

**... powerful ... compact ... capable
of high tonnage output!**

In the large stamping plants and rolling mills where it is critically important that trim and stamping skeletons are quickly disposed of to avoid interference with production, LOGEMANN metal balers are relied on to keep ahead of production and pack such scrap into high density, self-cohering bricks for re-melting.

Hundreds of installations have established new records for tonnage, minimum maintenance, reliability, over extended periods of uninterrupted operation at high-speed.

LOGEMANN models are not confined to the large sizes. Many small plants have found it profitable to use smaller sizes embodying the same features of reliability, at minimum operating cost. Interested parties are invited to write for details. Information as to the character of the scrap, tonnage to be handled in a given period of hours, and range of gauges is helpful in determining the proper model.



HYDRAULIC VALVES

The illustration shows a close-coupled hydraulic valve, operated by compressed-air cylinders for high-speed distribution of large gallonage of fluid at high pressure. LOGEMANN engineers have designed and built valves for many unusual as well as standard applications, and will welcome inquiries, with an outline of the conditions and requirements.



HYDRAULIC PUMPS

The opposed-cylinder close-coupled double pressure pump shown in the illustration is mounted on an individual tank to conserve floor space under present crowded plant and operating conditions. When requesting details, please indicate the nature of the service, pressure and gallonage requirements, and the fluid to be handled.

LOGEMANN BROTHERS CO.

126 W. BURLEIGH STREET • MILWAUKEE 10, WISCONSIN

Titanium Orders Lag

Business is down although a strong first half will make 1957 the industry's best year. Another cut in the primary copper price is likely as custom smelter and foreign prices drop

Nonferrous Metal Prices, Pages 218 & 219

TITANIUM SHIPMENTS are headed for a record year (see chart), but there's little rejoicing in the industry. Reason: Shipments are running 25 per cent lower than they were in the first half and will probably fall even more in 1958.

The year started off with a bang; 3828 tons of mill products were shipped in the first six months—the figure should reach around 6800 tons by yearend. The total in 1956 was 5000 tons.

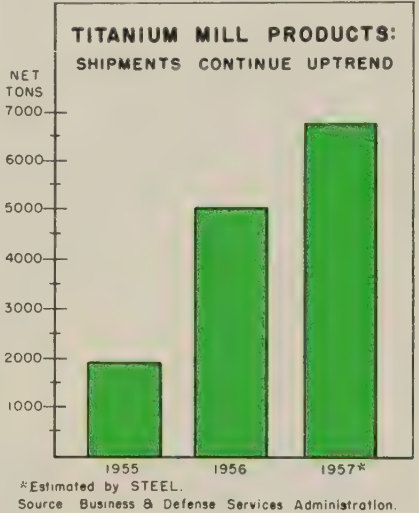
Down—But business has lost its snap since midyear. The reason: Uncle Sam has canceled or stretched out virtually every military aircraft order (about 95 per cent of titanium production goes into military aircraft). Some examples: B-52 production was cut by 25 per cent; production of F-101, F-104, and F-106 fighters was curtailed; the Navaho missile, slated to take substantial amounts of titanium, was scratched.

Producers, viewing the trend away from manned aircraft and aware that some new models, such as the B-58, take no titanium, are casting an appraising eye at missiles. They point out that 38 missiles, weighing from 18 to 200,000 lb, are under development. Estimates of this market for titanium range from the highly optimistic to the cautious. (Some titanium now goes into missile nose cones and other components.) One industry spokesman predicts titanium will be tomorrow's missile airframe material. Another says missiles will never take the tonnage the aircraft industry did.

Future—It's generally agreed titanium's long-range future is tied to civilian applications. So far, two factors have prevented any great entry into this market: 1. Relatively high cost. 2. Insufficient production.

The price has steadily come down

—it's now \$2.25 a pound for Grade A-1 ductile sponge, about one-half of the 1954 quotation. Although no producer has announced plans for



further price revisions, some believe the industry will see another slash by yearend.

Actually, producers say, the major hitch to crashing the civilian market has been availability rather than price. One producer compares titanium's status to that of aluminum several years ago—he believes the increased production and shrinking military demand will be healthy for the industry in the long run because they will encourage civilian uses.

Several new applications may hold the key to the metal's future. Example: Titanium Metals Corp. of America, New York, reports what is said to be the largest industrial order for fabricated titanium in the history of the industry—7 miles of seamless pressure tubing. To be extruded in 2130 sections, each 17.5 ft long, it will be used in eight kettle-type heat exchangers employed in processing nickel and cobalt ore. (For a complete rundown on titanium, watch for the Sept. 23 issue of STEEL.)

Copper: More Price Cuts?

There's no end in sight to the downward spiral of copper prices. The betting is that primary will see another price slash soon, probably to the 25.5 or 26 cent a pound level. (It's now quoted at 27 cents.)

Recent dips in both custom smelted and primary grades have had no effect on demand. In fact, the market is weaker than before. Some examples: 1. Custom smelters cut their quotation an additional 1.5 cents on Sept. 9 to the 25 cent a pound level. Observers say they are doubtful the price can hold. One custom smelter reports a mild pickup in business, but admits it is not strong enough to sustain the current price. 2. Sinking foreign prices are having their usual depressing effect on the American market. On Sept. 11 the bid price on the London Metal Exchange was down to 22.87 cents—on the same day the Rhodesian Selection Trust was quoting 23.75 cents. A combination of these factors will pull down the primary

NONFERROUS PRICE RECORD

	Price Sept. 11	Last Change	Previous Price	Aug. Avg	July Avg	Sept., 1956 Avg
Aluminum ..	28.10	Aug. 1, 1957	27.10	28.100	27.100	27.100
Copper	25.00-27.00	Sept. 9, 1957	26.50-27.00	28.639	28.822	39.500
Lead	13.80	June 11, 1957	14.80	13.800	13.800	15.800
Magnesium .	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	64.500
Tin	93.25	Sept. 5, 1957	93.00	94.259	96.576	103.745
Zinc	10.00	July 1, 1957	10.50	10.000	10.000	13.500

Quotations in cents per pound based on: COPPER, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary ingots, 99 + %, deld.; MAGNESIUM, pig, 99.8%, Velasco, Tex.

ce again before too long, metals-
n say.

Industry spokesmen are more
sitive than ever that a sharp pro-
ction curtailment will have to
ke place soon. A possible fore-
nner of a cutback wave was the
nouncement by Calumet & Hecla
.: It is considering a complete
sedown of operations at its cop-
r mining division in Calumet,
ch., because of the decline in
ces. Another factor, an explo-
n at Anaconda Co.'s Chuquica-
ta mine in Chile, has stopped
oduction at the 20,000-ton a-
nth facility.

Observers say there's nothing
ong with the copper market that
oduction cuts won't cure. One
talsman predicts that as soon as
e price stabilizes orders will rise.
Several industry spokesmen have
led recently for governmental
ion to end the wave of imports,
other of copper's problems. One
n calls for the government to re-
pose the 2 cent a pound levy on
eign ore when the domestic price
ls to 27 cents (the present peril
nt is 24 cents a pound); another
n suggests a 6 cent a pound im-
t tax when the price level drops
ow 32 cents.

Aluminum Sales Steady

Producers report business is fair,
hough the expected fall upturn
sn't materialized. Industry
urces say developments in the
xt month should point up just
w good sales will be the rest of
e year.

Aluminum sheet and plate ship-
ments hit 59,613 tons in July, com-
red with 52,964 tons in June, re-
rts the Aluminum Association.
ipments for the first seven
onths totaled 392,239 tons. This
ar's shipment of aluminum foil
nds at 50,236 tons.

Mag Ingot Output Up

Primary production of magnesi-
a in July was 6598 tons, reports
e Magnesium Association. It com-
res with 6534 tons in June and
36 tons in July of 1956. Ship-
ents of wrought products were
wn—714 tons in July, compared
th 941 tons in June and 1001
ns in July, 1956.



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Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 26.00; ingots, 28.10, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 29.90; No. 43, 29.70; No. 195, 31.30; No. 241, 31.50; No. 356, 29.90, 30-lb ingots.

Antimony: R.M.M. brand, 99.5%, 33.00; Lone Star brand, 33.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.50-28.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, \$71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, \$74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, \$43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: \$2.25 per lb, ton lots.

Cadmium: Sticks and bars, \$1.70 per lb deld.

Cobalt: 97-99%, \$2.00 per lb for 550-lb keg; \$2.02 per lb for 100-lb case; \$2.07 per lb under 100 lb.

Columbium: Powder, \$120 per lb, nom.

Copper: Electrolytic, 27.00 deld.; custom smelters, 25.00; lake, 27.00 deld.; fire refined, 26.75 deld.

Germanium: First reduction, \$179.17-197.31 per lb; intrinsic grade, \$197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, \$35 per oz.

Indium: 99.9%, \$2.25 per troy oz.

Iridium: \$86-110 nom. per troy oz.

Lead: Common, 13.80; chemical, 13.90; cor-rodling, 13.90, St. Louis, New York basis, add 0.20.

Lithium: 98+% , cups or ingots, \$11.50; rod, \$13.50; shot or wire, \$14.50, f.o.b. Minneapolis, 100 lb lots.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, \$250-252 per 76-lb flask.

Molybdenum: Unalloyed, turned extrusions, 3.75-5.75 in. round, \$9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter, 71.25 per lb of nickel content before 1 cent freight allowance, f.o.b. Copper Cliff, Ont.

Osmium: \$80-100 per troy oz, nom.

Palladium: \$21-24 per troy oz.

Platinum: \$81-87 per troy oz from refineries.

Radium: \$16-21.50 per mg radium content, depending on quantity.

Rhodium: \$118-125 per troy oz.

Ruthenium: \$45-55 per troy oz.

Selenium: \$10.50 per lb, commercial grade.

Silver: Open market, 90.625 per troy oz.

Sodium: 16.50, c.l.; 17.00 l.c.l.

Tantalum: Rod, \$60 per lb; sheet, \$55, per lb.

Tellurium: \$1.65-1.85 per lb.

Thallium: \$12.50 per lb.

Tin: Straits, N. Y., spot, 93.25; prompt, 93.00.

Titanium: Sponge, 99.3+% , grade A-1 ductile (0.3% Fe max.), \$2.25; grade A-2 (0.5% Fe max.), \$2.00 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, \$3.50 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99+% hydrogen reduced, \$4.10-4.20.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.35; special high grade, 11.75 deld. Die casting alloy ingot No. 3, 14.25; No. 2, 15.25; No. 5, 14.75 deld.

Zirconium: Sponge, commercial grade, \$5-10 per lb.

(Note: Chromium, manganese, and silicon met-als are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 24.25-30.25; No. 12 foundry alloy (No. 2 grade), 22.25-23.00; 5% silicon alloy, 0.60 Cu max., 25.50-26.00; 13 alloy, 0.60 Cu max., 25.50-26.00; 195 alloy, 25.25-26.75; 108 alloy, 22.75-23.00. Steel deoxidizing grades, notch bars, granu-lated or shot; Grade 1, 24.00; grade 2, 22.25; grade 3, 21.25; grade 4, 19.75.

Brass Ingot: Red brass, No. 115, 27.25; tin bronze, No. 225, 35.50; No. 245, 29.75; high-leaded tin bronze, No. 305, 30.25; No. 1 yellow, No. 405, 21.50; manganese bronze, No. 421, 24.00.

Magnesium Alloy Ingot: AZ63A, 40.75; AZ91B, 37.25; AZ91C, 40.75; AZ92A, 40.75.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb. plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, \$1.82, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, \$1.80, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 30,000-lb lots, 32.355; l.c.l., 32.98. Weatherproof, 30,000-lb lots, 33.66; l.c.l., 34.78. Magnet wire deld., 40.43, before quantity discount.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, \$19.50 per cwt; pipe, full coils, \$19.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, \$9.50-15.95; sheared mill plate, \$8.00-11.50; wire, \$7.50-11.50; forging billets, \$6.00-7.60; hot-rolled and forged bars, \$6.15-7.90.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

ZIRCONIUM

Plate, \$12.50-19.20; H.R. strip, \$12.50-22.90; C.R. strip, \$15.00-31.25; forged or H.R. bars, \$11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strip, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100 and 3003 mill finish (30,000 lb base; freight allowed).

Thickness	Range	Flat Sheet	Coiled Sheet
0.249-0.136		43.10-47.60	....
0.135-0.096		43.60-48.70	40.50-41.10
0.095-0.077		44.30-50.50	40.60-41.30
0.076-0.061		44.90-52.80	40.80-42.00
0.060-0.048		45.60-55.10	41.40-43.10
0.047-0.038		46.20-57.90	41.90-44.50
0.037-0.030		46.60-62.90	42.30-46.30
0.029-0.024		47.20-54.70	42.60-47.00
0.023-0.019		48.20-58.10	43.70-45.40
0.018-0.017		49.00-55.40	44.30-46.00
0.016-0.015		49.90-56.30	45.10-46.80
0.014		50.90	46.10-47.80
0.013-0.012		52.10	46.80
0.011		53.10	48.00
0.010-0.0095		54.60	49.40
0.009-0.0085		55.90	50.90
0.008-0.0075		57.50	52.10
0.007		59.00	53.60
0.006		60.60	55.00

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in., 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.70	47.50
5050-F	43.80	48.60
3004-F	44.80	50.50
5052-F	45.40	51.20
6061-T6	46.90	53.00
2024-T4*	50.60	57.40
7075-T6*	58.40	66.00

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base. Diam. (in.) or —Round— —Hexagonal— across flats 2011-T3 2017-T4 2011-T3 2017-T4

Drawn

0.125	78.20	75.20	....	....
0.156-0.172	66.20	63.40	....	....
0.188	66.20	63.40	....	81.60
0.219-0.234	63.00	61.50	....	....
0.250-0.281	63.00	61.50	....	77.90
0.313	63.00	61.50	....	74.20
0.344	62.50	....	....	....

Cold-Finished

0.375-0.547	62.50	61.30	74.80	69.80
0.563-0.688	62.50	61.30	71.10	65.50
0.719-1.000	61.00	59.70	64.90	61.70
1.063	61.00	59.70	....	59.60
1.125-1.500	58.60	57.40	62.80	59.60

Roller

1.563	57.00	55.70	....	....
1.625-2.000	56.30	54.90	....	57.50
2.125-2.500	54.80	53.40	....	....
2.563-3.375	53.20	51.70	....	....

Forging Stock: Round, Class 1, 45.20-58.60 in specific lengths, 36-144 in., diam. 0.375-8 in. Rectangles and squares, Class 1, 50.50-66.60 in random lengths, 0.375-4 in. thick, width 0.750-10 in.

Pipe: ASA schedule 40, alloy 6063-T6, standard lengths, plain ends, 90,000-lb base, per 100 ft.

Nom. Pipe Size (in.)	Nom. Pipe Size (in.)	\$
1	2	\$ 59.90
1 1/2	4	165.05
2	6	296.10
2 1/2	8	445.55

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	45.40-47.00	60.60-64.80
12-14	45.70-47.20	61.30-65.50
15-17	45.90-47.90	62.50-67.50
18-20	46.50-48.30	64.50-70.10

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grade, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Thread plate, .188 in., 71.70; .250-2.00 in., 70.60. Tooling plates, .250-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.) **Aluminum:** 1100 clippings, 13.00-13.50; old sheets, 10.00-10.50; borings and turnings, 6.50.

BRASS MILL PRICES

MILL PRODUCTS a

	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	49.13b	46.36c	....	49.32	23.000	23.000	22.250
Yellow Brass	43.02	31.30d	43.56	45.93	17.375	17.125	15.750
Low Brass, 80%	45.50	45.44	46.04	48.31	19.500	19.250	18.750
Red Brass, 85%	46.37	46.31	46.91	49.18	20.250	20.000	19.500
Com. Bronze, 90%	47.78	47.72	48.32	50.34	21.000	20.750	20.250
Manganese Bronze	51.01	45.11	....	....	16.125	15.875	15.375
Muntz Metal	45.39	41.20	....	....	16.375	16.125	15.625
Naval Brass	47.27	41.58	54.33	50.68	16.125	15.875	15.375
Silicon Bronze	53.76	52.95	53.80	55.74e	22.625	22.375	21.625
Nickel Silver, 10%	59.43	....	....	....	23.625	23.375	11.813
Phos. Bronze, A-5%	68.07	68.57	68.57	69.75	23.750	23.500	22.500

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

; crankcases, 10.00-10.50; industrial cast-
s, 10.00-10.50.

Copper and Brass: No. 1 heavy copper and
e, 18.50-19.00; No. 2 heavy copper and wire,
50-18.00; light copper, 15.50-16.00; No. 1
composition red brass, 17.00-17.50; No. 1 com-
position turnings, 16.50-17.00; yellow brass
clippings, 9.50-9.75; new brass clippings,
10-16.00; light brass, 10.00-10.50; heavy
low brass, 11.50-12.00; new brass rod ends,
50-14.00; auto radiators, unsweated, 12.50-
10; cocks and faucets, 13.50-14.00; brass
s, 14.00-15.00.

Lead: Heavy 9.50-10.00; battery plates,
5-4.50; linotype and stereotype, 11.50-12.00;
trotty, 10.00-10.50; mixed babbitt, 11.00-
0.

Steel: Clippings, 32.00-34.00; old sheets,
10-32.00; turnings, 24.00-25.00; rods, 32.00-
0.

Steel: Sheets and clips, 55.00-60.00; rolled
des, 55.00-60.00; turnings, 45.00-50.00;
ends, 55.00-60.00.

Steel: Old zinc, 3.00-3.25; new diecast scrap,
3-3.00; old diecast scrap, 1.50-1.75.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 1100 clippings, 17.00-17.50; 3003
clippings, 17.00-17.50; 6151 clippings, 16.50-
0; 5052 clippings, 16.50-17.00; 2014 clip-
s, 16.00-17.00; 2017 clippings, 16.00-17.00;
clippings, 16.00-17.00; mixed clippings,
0-16.00; old sheets, 13.50; old cast, 13.50;
n old cable (free of steel), 16.50; borings
turnings, 14.00-15.00.

Villium Copper: Heavy scrap, 0.020-in. and
over, not less than 1.5% Be, 53.00; light
p, 48.00; turnings and borings, 33.00.

Copper and Brass: No. 1 heavy copper and
s, 20.50; No. 2 heavy copper and wire,
5; light copper, 16.50; refinery brass
(% copper) per dry copper content, 17.75.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper and Brass: No. 1 heavy copper and
s, 20.50; No. 2 heavy copper and wire,
5; light copper, 16.50; No. 1 composition
ings, 17.75; No. 1 composition solids, 18.25;
y yellow brass solids, 13.00; yellow brass
ings, 12.00; radiators, 13.75.

PLATING MATERIALS

(Cents per lb. shipping point, freight allowed on
titles)

ANODES

Aluminum: Special or patented shapes, \$1.70
lb.

Copper: Flat-rolled, 45.29; oval, 43.50, 5000-
00 lb; electrodeposited, 35.75, 2000-5000
ots; cast, 36.25, 5000-10,000 quantities.

Steel: Depolarized, less than 100 lb, 114.25;
499 lb, 112.00; 500-4999 lb, 107.50; 5000-
99 lb, 105.25; 30,000 lb, 103.00 Carbonized,
act 3 cents a lb.

**Bar or slab, less than 200 lb, 111.50; 200-
lb, 110.00; 500-999 lb, 109.50; 1000 lb or
e, 109.00.**

Cast: Balls, 17.50; flat tops, 17.50; flats,
5; ovals, 18.50, ton lots.

CHEMICALS

Aluminum Oxide: \$1.70 per lb in 100-lb drums.
Chromic Acid: 1000 lb, 33.30; 500 lb, 32.80;
50 lb, 32.15; 5000 lb, 31.80; 10,000 lb, 31.30,
b, Detroit.

Copper Cyanide: 100-200 lb, 74.80; 300-900
72.80.

Copper Sulphate: 100-1900 lb, 14.55; 2000-5900
12.55; 6000-11,900 lb, 12.30; 12,000-22,900
12.05; 23,000 lb or more, 11.55.

Mercuric Chloride: Less than 400 lb, 35.00; 400-
lb, 33.00; 10,000 lb, 32.50.

Mercuric Sulphate: 5000-22,000 lb, 33.50; 23,000-
00 lb, 33.00; 36,000 lb or more, 32.50.

Sodium Cyanide: 100 lb, 27.50; 200 lb, 25.80;
lb, 22.80; 1000 lb, 21.80; f.o.b. Detroit.

Sodium Stannate: Less than 100 lb, 74.70; 100-
lb, 65.80; 700-1900 lb, 63.00; 2000-9900 lb,
0; 10,000 lb or more, 59.80.

Sulfurous Chloride (anhydrous): Less than 25
164.10; 25 lb, 129.10; 100 lb, 114.10; 400
111.60; 5200-19,600 lb, 99.40; 20,000 lb or
e, 87.20.

Sulfurous Sulphate: Less than 50 lb, 126.90; 50
96.90; 100-1900 lb, 94.90; 2000 lb or more,
0.

Sulfur Cyanide: 100-200 lb, 59.00; 300-900 lb,
0.

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land 13, Ohio.

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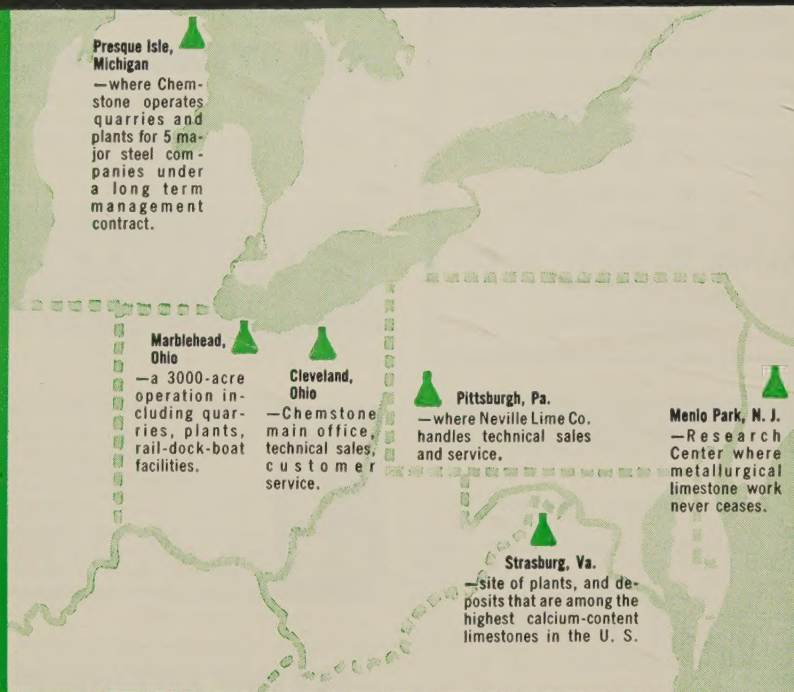
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